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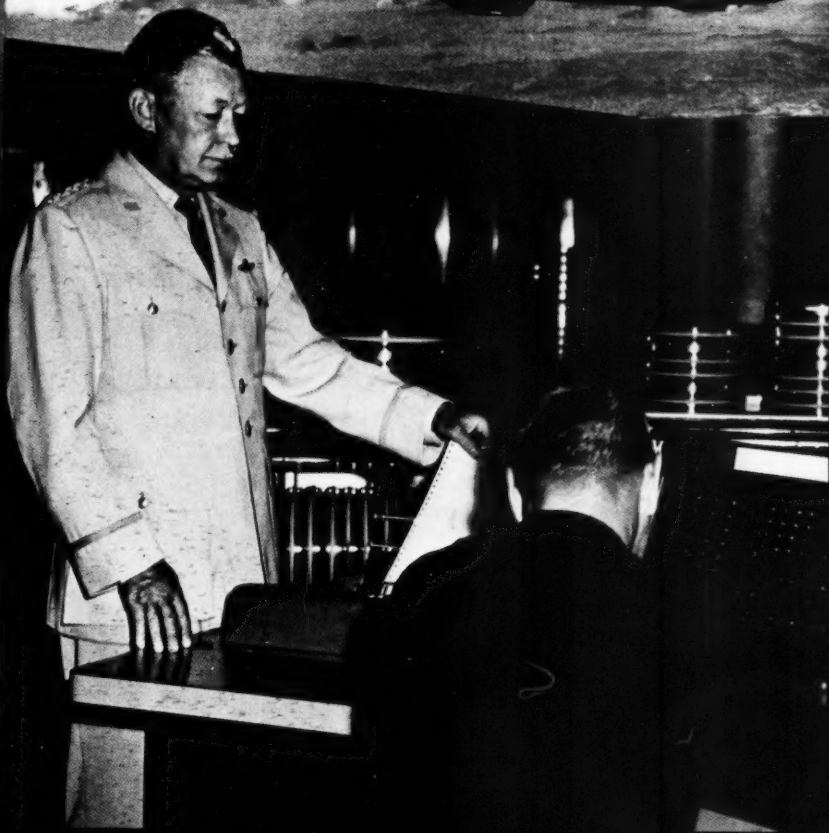
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# DOING BUSINESS WITH THE AIR MATERIEL COMMAND



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Apr.	Navy Supply System
May	Army Ordnance
June	Air Materiel Command
July	Navy ASW Program
Aug.	Navy Astronautics Program
Sept.	Army Signal Corps
Oct.	Army R&D Program
Nov.	Mutual Security (ICA) Program
Dec.	Dept. of Defense

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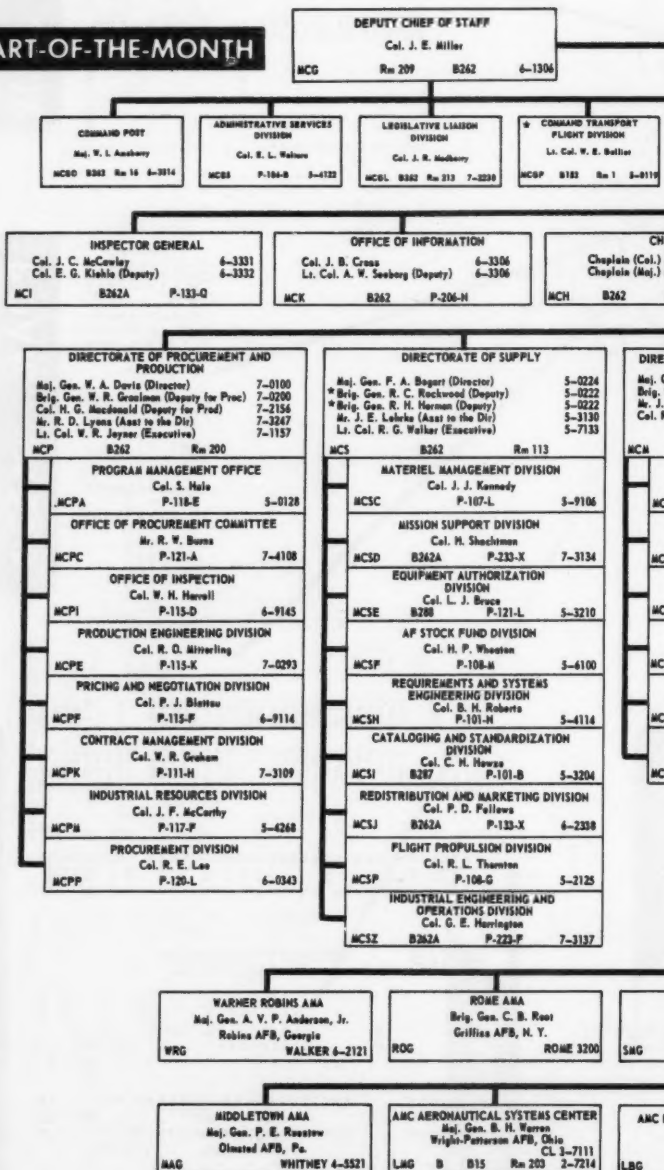


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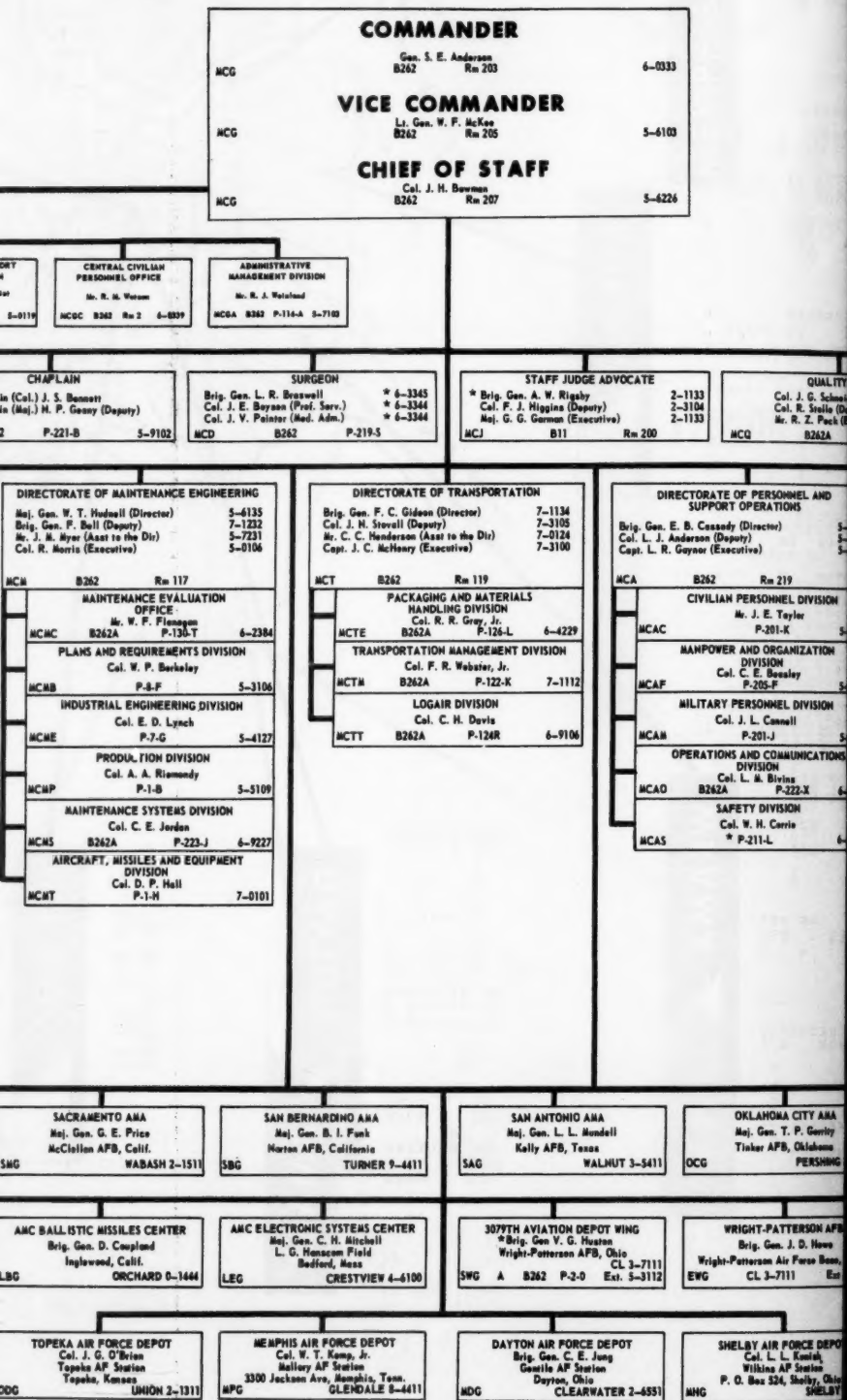
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## DATAGRAF CHART-OF-THE-MONTH







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	<b>VICE COMMANDER</b>	
CG	Lt. Gen. W. F. McKee B262 Rm 205	5-6103
	<b>CHIEF OF STAFF</b>	
CG	Col. J. H. Bowman B262 Rm 207	5-6226

<b>ADMINISTRATIVE MANAGEMENT DIVISION</b>	
Mr. R. J. Voteland	
DA	B262 P-116-A 5-7180

<b>SURGEON</b>	
Gen. L. R. Braswell	* 6-3345
J. E. Boyaan (Prof. Serv.)	* 6-3344
J. V. Painter (Med. Adm.)	* 6-3344
B262	P-219-S

<b>STAFF JUDGE ADVOCATE</b>	
* Brig. Gen. A. V. Rigby	2-1133
Col. F. J. Higgins (Deputy)	2-3104
Maj. G. G. Gorman (Executive)	2-1133
MCJ	B11 Rm 200

<b>QUALITY CONTROL</b>	
Col. J. G. Schneider	5-1111
Col. R. Snell (Deputy)	5-1111
Mr. R. Z. Pack (Executive)	5-3322
MCQ	B262A P-233-A

<b>ENGINEERING</b>	
5-6135	
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<b>VISION</b>	
5-4127	

5-5109

<b>DN</b>	
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7-0101	

<b>DIRECTORATE OF TRANSPORTATION</b>	
Brig. Gen. F. C. Gibson (Director)	7-1134
Col. J. H. Stovell (Deputy)	7-3185
Mr. C. C. Henderson (Asst to the Dir)	7-0124
Capt. J. C. McHenry (Executive)	7-3180
MCT	B262 Rm 119
<b>PACKAGING AND MATERIALS HANDLING DIVISION</b>	
Col. R. R. Gray, Jr.	6-4229
MCTE	B262A P-126-L
<b>TRANSPORTATION MANAGEMENT DIVISION</b>	
Col. F. R. Webster, Jr.	7-1112
MCTM	B262A P-122-K
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Col. C. H. Davis	6-9106
MCTT	B262A P-124R

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Capt. L. R. Goyner (Executive)	5-9286
MCA	B262 Rm 219
<b>CIVILIAN PERSONNEL DIVISION</b>	
Mr. J. E. Taylor	5-7232
MCAC	P-201-K
<b>MANPOWER AND ORGANIZATION DIVISION</b>	
Col. C. E. Bessley	5-1100
MCAP	P-205-F
<b>MILITARY PERSONNEL DIVISION</b>	
Col. J. L. Connell	5-7210
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Col. L. M. Bivins	6-4325
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Col. W. H. Corrie	6-4160
MCAS	* P-211-L

<b>Maj. Gen. Col. C. C. Mr. T. W. Lt. Col.</b>	
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MHG	SHELBY 3-2010

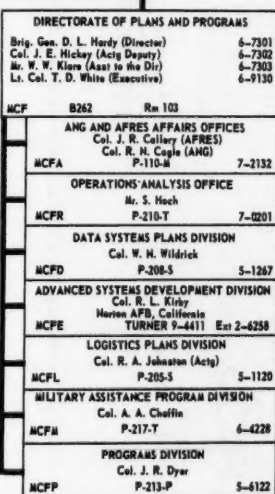
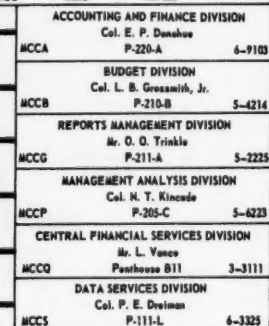
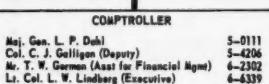
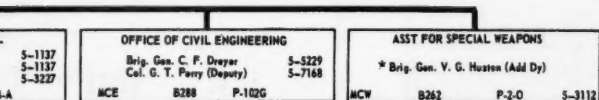
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1 June 1960  
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53S	MO P	6640		1660	MO P
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582	MO P	6695			
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Except 5965, 5975 & 5995					
605	MO P				
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**AIR MATERIEL COMMAND  
WRIGHT-PATTERSON AFB  
Frontispiece, June 1960 issue**

Prepared By  
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3	Guided Missiles	58	Construction, Mining, Excavating and Highway Maintenance Equipment	83	Clothing and Individual Equipment
4	Guided Missiles	59	Materials Handling Equipment	84	Toiletries
5	Aircraft and Airframe Structural Components	60	Kops, Cable, Chain, and Fittings	85	Agricultural Supplies
6	Aircraft Components and Accessories	61	Arm and Signal Systems	86	Articulated Equipment
7	Aircraft Launching, Landing and Ground Handling Equipment	62	Armaments and Ammunition	87	Automotive Equipment
8	Ships	63	Fire Fighting, Rescue, and Safety Equipment	88	Automotive Equipment
9	Ships	64	Pumps and Compressors	89	Automotive Equipment
10	Ship and Marine Equipment	65	Furnace, Steam Plant, and Drying Equipment	90	Automotive Equipment
11	Railway Equipment	66	Food Preparation and Serving Equipment	91	Automotive Equipment
12	Railway Equipment	67	Food Preparation and Serving Equipment	92	Automotive Equipment
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77	Trucks	132	Food Preparation and Serving Equipment	157	Automotive Equipment
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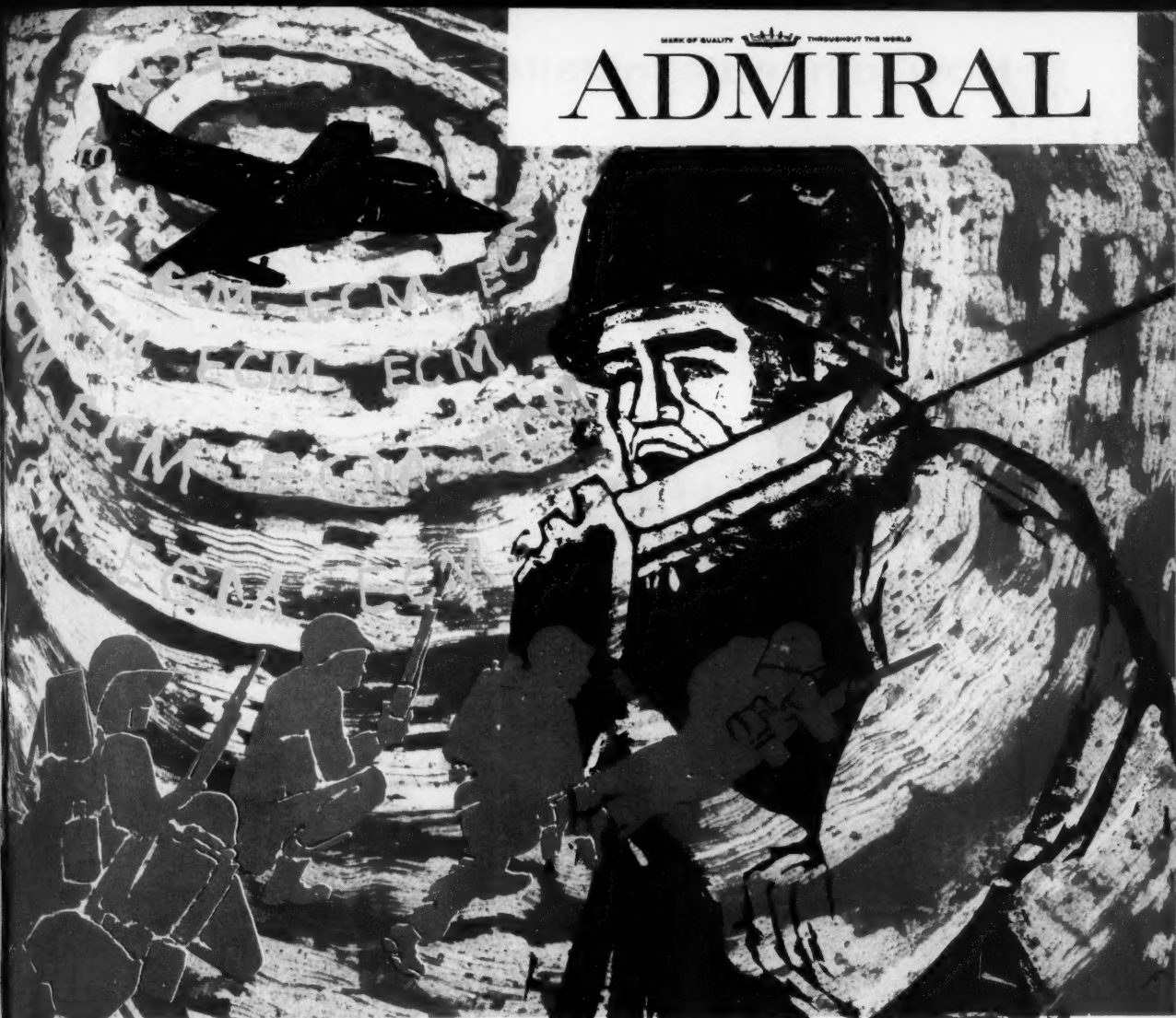
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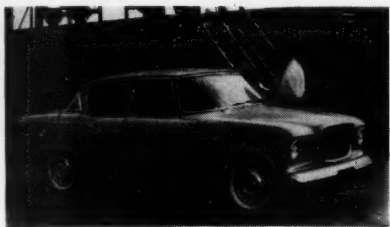
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AMC's Commander, General S. E. Anderson, is shown in composite with tools of his trade.

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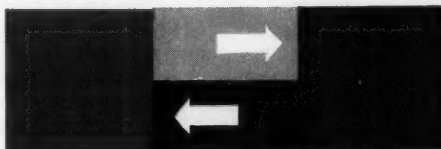
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# INTERPRETIVE DATA

by Harold Helfer/DATA

## Comments on Man's Dream of Self-powered Flight . . .

ONE of man's earliest dreams has been to fly like a bird. And now, by jimminy, he's doing it! In fact, as he goes streaking across the sky in his jet craft, he can go further and faster than the swiftest bird. There isn't even any comparison any more.

And yet there is something missing.

No bird has ever been clocked at much more than 100 miles an hour or so. We can go 10 times that fast. We can circle the globe in a plane while most birds would be winging their way from one end of California to the other.

So why should we be carping at all? What have birds got that we don't have?

The obvious answer would seem to be that we're ahead in all departments, that we've actually left the little feathered creatures far behind in all aspects of aeronautics.

And yet—let's face it—there is a gnawing disquietude and dissatisfaction about it all. We are, to be utterly honest about it, still just a bit envious of the bird.

And, if we bring our musings down to earth somewhat, we can begin to perceive why this is. We take off like birds, we go through the sky lanes like birds, we land like birds, but there is one way we are not like birds: Free.

And that is perhaps the thing about birds that charm us most: their blithe, unfettered freedom. They take off when they take a notion and fly off into the wild blue yonder. Without being dependent on a single bolt or nut or a single ounce of petrol.

We fly through the air with seemingly the greatest of ease these days, and yet, in a sense, we are prisoners. We must stick to the enclosures of our vehicles. We'd be utterly lost—doomed—without it. It really isn't we who are flying . . . it is one of our vanities to say so . . . but it is the machine.

And today, as we stand on the threshold of the conquest of space, as the time nears when a man will be orbiting around in a capsule satellite, the longing of man to just flutter unpretentiously about in the sky like a bird, still persists. And, as a matter of fact, something is being done about it!

A team of British flight experts, the Man-Powered Flight Committee of the Royal Aeronautical Society, is making a determined bid to see if it can't make man truly bird-like.

There are, truth to tell, not one but *two* schools of thoughts that have grown up on just how this should be done. One favors a fixed wing with foot-powered propeller. The other leans to a flapping wing.

The chief flapping wing exponent, one Emiel Hartman, has constructed a delicate glider-like affair featured by a pair of sensitive wings that are flapped by man's own efforts. Then there's the fixed-wing set-up of Dan Perkins. To maneuver about the air in

this, a man must furiously pedal a cycle-like contraption enclosed in a pod beneath the wing.

Head of the Man-Powered Flight Committee, Henry Irving, who, incidentally, is 70, has this to say about all this: "The belief that man can fly is not just emotion. We know the amount of power that a man can develop, and we know the power needed to fly."

Don't think the British blokes are the only ones who have got the idea they'd like to do a bit of sky fluttering. In France and the Soviet Union there are movements underway to give man the free-as-a-bird flight feeling. The report is, incidentally, that the Russians lean toward the flapping-wing principle rather than the pedaling idea.

This apparently is too capitalistic an idea for the Soviets, but both England and France have offered prizes for the first man to truly fly, or to engage in a "man-powered flight," to use the technical vernacular. In England, the first man who flies away "on his own" will get something like \$14,000 and about the same amount of money awaits the first Frenchman who duplicates the feat.

Anyway, there is something heartening about all this. It is proof that, even in this highly-mechanical, super-instrumented, pushbuttonish age, that man really hasn't completely lost his identity and integrity. He is able to realize that, while he undoubtedly can build a better engine than a bird, that there is something wonderful about the very fact that a bird *doesn't have* to build an engine, that he can soar about in the blue all by his ownsome.

And that may be the key word to it all—*soar*. Man may be able to zoom and streak across the skies, but the exhilarating, magnificent feeling that comes with *soaringness*, of truly flying about in the perfect freedom of his own body movement, that and nothing else, is denied him.

But who is to say that it will be forever thus? Henry Irving states: "Not until a man has flown for at least a mile under his own power can we truthfully say he has learned to fly." And he does not say this darkly, but in the manner of a man who has established a goal and a standard so that it may be reached.

Anyhow, it is to man's everlasting glory that he kids himself not. He is willing to distinguish the genuine from the mechanical, the soulful from the contrived.

And therein lies man's real hope. He will not let the world get too much with him, even the space world. He is still a creature that strives for what is true and worthwhile.

Even in this supersonic, outerspace, ICBM world, man instinctively recognizes that there is more to life than merely increasing speed. It is good to know, even if he looks clumsier than the most gauche goose as he goes flapping about in the sky, that man is still possessed of some deep inner something that no bolts and screws can ever match.



## OTS, EVERYBODY'S CLEARINGHOUSE

**M**AYBE THEY should have called the Office of Technical Services something else — like, say, Uncle Sam's Information Clearinghouse.

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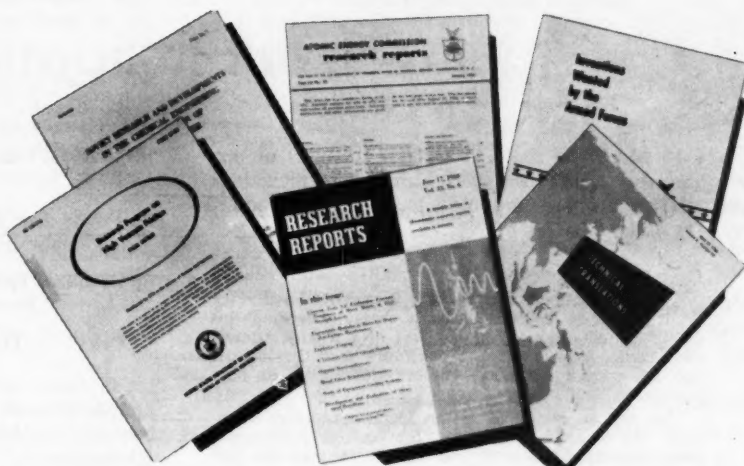
Not only that, several thousand translations reporting what the Russians and other nations are doing technologically are distributed by OTS.

The \$8 billion worth of federally supported research is being performed in Government, industrial and institutional laboratories, utilizing some of the nation's best scientific talent . . . and the results and developments of all this can be extremely valuable to many business and industries engaged in their own R&D activities.

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instance, a manufacturer of miners' helmets recently was stuck with a problem requiring a new type of battery. He asked OTS for assistance and the office (which is part of the Department Of Commerce and located in the Department's building in Washington) turned up a military research report describing just such a battery which saved him the thousands of dollars he would have spent in his own R&D.

A manufacturer of mirrors was plagued with spots appearing on the mirrors and causing him a loss of \$10,000 a year. A military research report from OTS solved the problem. Currently many electronic concerns have their eyes on the development of the Solion, an electric sensing device developed by the Navy which could integrate inertial guidance better than the gyroscope, detect heat better than a thermostat, and, in combination, amplify sound better than vacuum tube systems.

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port or reports that intrigue you most—these reports cost from 50 cents to \$10. The average price is about the price of a carton of cigarettes and could mean hundreds of thousands of dollars to you.

You can also, if you like, subscribe to Technical Reports Newsletters at \$1 a year. This comes out once a month too and describes in some detail 8 or 10 of the most widely usable reports, usually the kind most likely to interest the smaller business man.

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Then, in addition, there are specially prepared bibliographies in fields of considerable industrial interests, such as transistors, plastics and adhesives. A list of these bibliographies is available on request.

So, as you can see, while the Office of Technical Services might sound like a somewhat innocuous agency, it's really a marvelous outfit with which to hook up. ■



# Subscribers to DATA Give Their Comments on the U-2 Incident and World Situation in General

ON 19 MAY we sent out a letter to 1200 of our Industry and Government subscribers picked at random from every geographical location of the country. The letter read as follows:

Dear DATA Reader:

The recent denouncement of President Eisenhower by Khrushchev in Paris and the events preceding this denouncement—the shooting down of our U-2 aircraft over Soviet Russia and the disclosure that the aircraft was on a spying mission—all are unprecedented happenings in our history.

You are an executive in the Defense-Industry Complex. We would like to know, for possible publication, your opinions as to what you think would be the best course of action for the U. S. to follow in the immediate future.

- Do you believe such spy flights by the U. S. should continue?
- Do you believe we should try to appease Khrushchev in regards to the U-2 incident?
- Do you believe that perhaps a preventative war at this time would be the best answer?
- What do you believe the U. S. should do about the fate of Francis Gary Powers, pilot of the downed U-2?
- WHO DO YOU BELIEVE WOULD BE THE BEST OF THE CURRENT PRESIDENTIAL ASPIRANTS TO TALK TO AND DEAL WITH KHRUSHCHEV?

We would appreciate receiving your views on any or all of these pertinent questions.

Sincerely,  
DATA Publications

From the 1200 letters sent out we received 76 complete replies—a mail response of 6.3% to date.

The answers ran as follows:

- Do you believe such spy flights by the U. S. should continue?

Yes	No	Undecided
60	14	2

- Do you believe we should try to appease Khrushchev in regards to the U-2 incident?

Yes	No	Undecided
5	69	2

- Do you believe that perhaps a preventative war at this time would be the best answer?

Yes	No	Undecided
10	61	5

- What do you believe the U. S. should do about

the fate of Francis Gary Powers, pilot of the downed U-2?

Trade for Russian Spy	Negotiate for Release
15	14

Demand Release	Leave it to State Department
1	2

Pray	Don't Know	Do Nothing for Him
1	4	39

- Who do you believe would be the best of the current presidential aspirants to talk to and deal with Khrushchev?

Nixon	Stevenson	Symington	Rockefeller
40	9	3	5

Kennedy	John Cabot Lodge	Johnson
1	1	2

John L. Lewis	Undecided
1	14

Reproduced below are some of the typical letters we received from our subscribers in answer to our questions. Perhaps your letter is among them.

- I believe that it is vital that we continue to obtain intelligence data such as that supplied by the U-2 flights.
- I do not believe that we should try to appease Khrushchev in regards to the U-2 incident. It is my belief that the Russians would construe this as a position of weakness rather than that of strength.
- I see no real evidence that man is making any real progress to live with his neighbor, and until such time as economic want is eliminated from the world, no real progress can be made toward elimination of wars. Preventive war is based upon the necessity for survival.
- Precedent on both sides will probably dictate the fate of the pilot of the downed U-2.
- Nelson Rockefeller.

H. NORDER  
Instrument Division  
LEAR, Incorporated  
Grand Rapids 2, Michigan

In your letter of May 19, you inquired as to my feeling on five different subjects in connection with the recent shooting down of our U2 airplane over Russia.

It is hard for me to take a strong position on some of these things because I am not in touch with all the information that is available, but I will give you the following thoughts which represent my opinion with the facts and knowledge that I have at hand at the present time.

- (a) I do not believe that the spy flights should be continued, particularly if there is a possibility that Russia could shoot down or destroy the aircraft. This would soon lead to a fighting war which I do not believe is in the interest of either country.
- (b) I don't see, with the way events have turned out, how we can do any more in appeasing Khrushchev than what Eisenhower has told him, namely, that the spy flights would be discontinued.
- (c) I do not feel that a preventive war is indicated at this time.
- (d) I don't see that the U. S. can do too much about the fate of Francis Powers. He was hired and paid accordingly to be a pilot of a spy flight, and as such, understood the risk that he was taking. This has been a traditional position in international law and I don't see that we could do too much about it.
- (e) I cannot assess which of the present presidential aspirants would be the best to talk and deal with Khrushchev because of not being very familiar with any of the candidates and certainly I am not really equipped to evaluate Khrushchev. I do feel that a younger more energetic individual would have more hope of handling this problem as it appears to be one that is really a test of stamina and personal endurance of an individual. I would, therefore, feel that a younger man than President Eisenhower might have a better chance at success in this arduous undertaking.

I hope the above will be of some assistance to you and it will be interesting to see what the results of your survey show.

D. E. ZESIGER  
Assistant Manager, Sales  
Goodyear Aircraft Corp.  
Litchfield Park, Arizona

\* \* \*

In answer to your request of May 19, my reply to questions:

- (a) Spy flights by the U. S. should continue until such time as the Soviets agree to reciprocal inspection of defense bases and facilities.
- (b) I do not believe that we should try to appease Khrushchev in regards to the U-2 incident unless he is willing to appease us for the espionage that they have been carrying on for the past 30 years.
- (c) I do not believe that a preventive war would be the best answer to the international situation.
- (d) I believe that the U. S. should exert all the in-

fluence that it has gained through the Mutual Security program to enlist the aid of the nations of the world which we have helped, to join with us in making an all-out effort to save Pilot Francis Gary Powers, the pilot of the downed U-2.

- (e) I believe that Richard Nixon would be the best of the current presidential aspirants to talk to and deal with Khrushchev. He has demonstrated that he had the spunk to stand "toe-to-toe" with Khrushchev when they met face to face.

JOSEPH L. BORDA  
National Association of  
Manufacturers  
Washington, D. C.

\* \* \*

Your recent questionnaire concerning the U-2 Flights is quite interesting—here is our opinion:

- (a) Intelligence activity should continue irrespective of method employed—if we cannot get information by qualified means other than aircraft then national interest dictates—use aircraft.
- (b) Mr. K. should receive the normal intelligence treatment on the U-2 incident—complete silence.
- (c) If the American people could be mobilized without outside knowledge as to scope of our plans the idea of preventative war is sound—but how do we conceal the build-up?
- (d) Mr. Powers knew the risks he was taking, in spite of the fact that he was obviously poorly trained, he failed in his mission by not destroying his aircraft via the detonator (we are aware this would have cost his own life)—as an agent he knew he could expect no help from his own government if caught—none should be offered, except on a swap of Col. Abel, basis.
- (e) This is in many ways a loaded question. We can best answer by saying who is *not* qualified: Mr. Stevenson as an appeaser of the Russians. Of Mr. Nixon or Kennedy—probably one is as good as the other. Certainly not Symington as he is as crude as Khrushchev himself.

For what it's worth.

ROBERT C. SELLERS,  
Senior Partner  
Robert C. Sellers & Associates  
Garden City, Long Island

\* \* \*

I received your Data Questionnaire, and will try to answer the questions as I believe. These reflect my ideas, not necessarily those of the company employing me. The following is in answer to the five questions asked:

- (a) I believe each country must continue its spying operations as long as the present situation prevails. That is, as long as an agreeable plan does not exist. A proper inspection plan may alleviate this problem. I don't believe spying should be openly defended, however. It is a necessary evil, and one of the "facts of life".
- (b) I believe that far brighter, and better trained men

should perform and carry out the acts of diplomacy, and not performers that act like diplomats. I think we, in the USA, could learn from the Russians and the English on the art of diplomacy, even though the Russians lack refinement and dignity. We should try to appease Khrushchev diplomatically to the extent that it gains us some common understanding, but at the same time showing a firmness that lets him know that we also understand the facts of life. I think that discretion is the better part of valor, and it may have been alright for the United States to tell Russia: "Look we both know we have to do these practices", but it should have been private, and at the executive level, and not through the medium of the front pages of the newspapers. The public has the right to know what is going on in our country, but not if it hurts our prestige, or throws away painful, time consuming and costly gains made in common understanding. I think we must try and do these things, not because it is nice, or moral, or right, or decent, or anything else, but because it is the necessary tool to accomplish our mission, and preserve our basic way of life.

- (c) I don't believe in preventative wars. War never solves anything, it is only the incubator for the next one.
- (d) The calculated risk of any spy mission is understood. The pilot may appear to have performed as only a tool in a spying mission, but the interpretations are a matter that the Russians should rightfully decide. I don't think we should or can do anything.
- (e) I believe Adlai Stevenson would be the man to talk and deal with Mr. Khrushchev. He is a diplomat, a man with a mind, foreign experience, dignity, patience and the intellect to defend this country's aims and welfare.

Whoever we choose however; we should not match a hot-head with a hot-head, but we should try to match a master of deviation with a master of deviation. They appear to be making the rules, perhaps we should play the game their way.

In summary, I believe this nation should try to act its age. We're a grown-up country now. It shouldn't be necessary to sensationalize our very thoughts, for the sake of selling newspapers. We need more good diplomacy, much patience, better understanding, more humility, yet not be taken-in because of a lack of firmness.

We should aim to gain the respect of the rest of the world in our affairs, with the dignity and maturity of a young but grown adult, not as a spoiled rich "kid". Let us learn from the lesson of this spy incident, and be a little wiser next time.

C. R. HERRMANN  
Rocket Propulsion Specialist for  
Advanced Technology Corp.  
Santa Barbara, California

- (a) I do not believe such spy flights by the U. S. should continue. Espionage is essential in gathering information concerning Russia and Iron Country nations; however, this type of espionage, when detected, plays more glaringly into the Russian propaganda scheme. More subtle means of espionage should be used, such as that employed by Russia on a large scale.
- (b) I do not believe we should try to appease Khrushchev in regard to the U-2 incident. It is known that Russia practices espionage on a grand scale. To try to appease "the old goat" would serve only as an additional weapon for Russian propaganda. The Russian leaders understand only one language—that is toughness. The United States should develop its all-around military strength (maintaining its economic strength) to a point equal or exceeding that of Russia and its satellites, take the diplomatic offensive (instead of defensive), and employ a "get-tough" policy with Russia. Only this the Russian leaders will understand.
- (c) A preventive war would serve no useful purpose—much to the contrary. We and our allies must become collectively strong—economically, militarily, and diplomatically, and assist underdeveloped nations. This would be the best deterrent to Russian intentions of world domination.
- (d) Much as it would be desired that Francis Powers be returned to the United States, I do not see how the U. S. can do anything about him. He and our Government have admitted that he was on a spying mission, and both were aware of the consequences before the mission was undertaken. He will undoubtedly be brought to trial by a Russian court, and it is difficult to visualize any assistance which could be given him by our Government.
- (e) Vice President Nixon, because of his diplomatic experience as vice president (which experience has exceeded that of past vice presidents), would be the best of the current presidential aspirants to talk to and deal with Khrushchev. In addition, I believe he would apply a "get-tough" policy with Khrushchev within the limits of good statesmanship and diplomacy.

R. C. HINMAN  
Western Gear Corporation  
Lynwood, California

\* \* \*

In answering your recent questionnaire, I feel that some of the opening statements may very definitely bear examination. For one, I was of the impression that Mr. Khrushchev denounced the United States and not President Eisenhower. It is yet to be proved whether the U-2 aircraft was actually shot down over Soviet Russia or whether Francis Powers delivered it in one piece. The disclosure that we have aircraft spying on Soviet Russia is nothing startling, when one considers that quite pertinent data on the U-2 has appeared in Model Airplane News carried on most newsstands.



These happenings are unprecedented in our history, only because they have been made public and as such, I feel, they have been made public only to further communist ends.

My views on your pertinent questions are as follows:

- (a) Since there is evidence that such flights are continuing, the question may be academic. It is interesting to note that no furor has been caused by photographic information gathered by satellites.
- (b) In this instance, it is completely impossible to appease Mr. Khrushchev, since his arguments are for propaganda purposes.
- (c) Economically, I feel, that a war of any type is unjustified. War has never answered anything. In this case it might be impossible to discern who won.
- (d) I do not believe that there is a single solitary thing that we can do for Mr. Powers, since control of his fate is in someone else's hands.
- (e) Nelson Rockefeller.

If the consensus of opinion is ever available, I would appreciate a copy.

ROBERT D. HART  
Sales Engineer  
Barth Engineering and  
Manufacturing Co., Inc.  
Meriden, Connecticut

\* \* \*

In answer to your questionnaire of May 19, 1960:

- (a) After a postponement of a reasonable time, flights should be continued if they will help us militarily.
- (b) No.
- (c) What is preventive war? Who decides the limitations? The fact is established that any agreement made with the U.S.S.R. is hopelessly one sided. To confer with a nation whose norms of morality are not in tune with our concepts of human dignity serves no useful purpose.
- (d) Frankly nothing.
- (e) At this time I think our best interests will be served if talks with U.S.S.R. are abandoned at the top level until such time as N. Khrushchev is replaced. This is in line with his policy of refusing to sit down with our President Eisenhower.

ERNEST J. BROOKS  
AVCO  
Andover, Massachusetts

\* \* \*

This is in reply to your letter of May 19th.

- (a) I believe we should continue reconnaissance flights on a carefully controlled basis, and only where the need for intelligence obtainable in this manner is great and the probability of success is of a high order.
- (b) I do not believe we should make any effort to

appease Khrushchev in connection with the U-2 incident.

- (c) I do not believe that a preventive war is the best answer at this time or any other time. There are more satisfactory methods of achieving our national purposes.
- (d) I do not believe that the U. S. should take any strong actions in regard to Francis Gary Powers who is assumed (1) to be an intelligent adult American citizen who was aware of the danger inherent in the undertaking; (2) was adequately compensated for such activities; (3) freely took the calculated risk and (4) was aware that traditionally a caught espionage agent is on his own.
- (e) Of the current presidential aspirants, Richard Nixon in my opinion, is the best qualified to talk and deal with Khrushchev. Their known dislike for each other would establish an antiseptic arena of negotiation. Negotiations would necessarily have to be on issues and facts. Nixon is an experienced and capable man, he can (and should) be vigorous and tough which is really the only posture respected by Khrushchev and Company.

D. J. FAGGE, President  
Potomac Electronics, Inc.  
Alexandria, Virginia

\* \* \*

The following is in reply to the questions raised in your letter of May 19, 1960. Although my opinions are obviously influenced by my association with the work carried out by the Foundation, it should be understood that they are solely my opinions and do not reflect any position by the Foundation as an organization.

- (a) I feel the United States must carry on whatever activities are necessary in order to obtain information to prevent a Pearl Harbor type situation. If U-2 type "spy flights" are required to obtain this information then I feel they should continue.
- (b) There should be no appeasement to Russia in connection with the U-2 incident.
- (c) War, preventative or otherwise, is not the solution to anything. We, obviously, must be prepared to defend ourselves, but I do not think that the United States can maintain the respect of the world by engaging in so-called preventive wars.
- (d) Without knowing the facts surrounding the pilot of the U-2, it is difficult to suggest what the position of the United States should be. However, if Francis Powers was, in fact, hired to carry out reconnaissance type flights and he was knowledgeable of what he was doing, then it is my position that he must take his chances without expecting interference from the United States. We expect our citizen soldiers to sacrifice themselves in a police action in Korea for considerably less than Francis Powers was being paid. Powers at least had the opportunity to decide whether or not he

wished to assume the risks necessarily attendant with reconnaissance flights over unfriendly territory.

- (e) I believe Mr. Nixon is probably as well suited as anyone else to deal with Khrushchev. I would be specifically concerned about the manner in which Mr. Stevenson might handle the situation.

FRED KREMER, JR.  
Business Manager  
Armour Research Foundation of  
Illinois Institute of Technology  
Chicago, Illinois

\* \* \*

In response to your letter dated 19 May 1960, I welcome the opportunity to make the following comments:

- (a) Without question, spy flights and other U. S. espionage activities should continue and perhaps be greatly accelerated.
- (b) Appeasement of Khrushchev in any form whatsoever would constitute downright stupidity.
- (c) A preventive war at this time would not be the best answer; however, there are many things which could be done to let the Russians know that we are ready and willing to fight if necessary. For example, the Federal Government should launch an all out educational program to show the American public how their lives can be saved in the event of an atomic war through the use of home fall-out shelters. If the public in general were prepared for protection against radioactive fall-out, Khrushchev would be much more reluctant to risk an atomic war because he would know that this country would have the potential to survive and make a come back. Also, Khrushchev and the rest of the world would know that we are psychologically ready to fight for our way of life.
- (d) With regard to Francis Gary Powers, there probably isn't much that the United States can do. His plight is all part of the game of espionage.
- (e) My vote for the next President will go to Stuart Symington, providing he can get nominated. I believe Symington has a more realistic comprehension of the problems facing this nation today than any other presidential aspirant. Also, I believe he would deal with these problems on more of a nonpartisan and impersonal basis than any other hopeful.

CORWIN D. DENNEY, President  
Automation Industries, Inc.  
Manhattan Beach, California

\* \* \*

It is not often that I respond to such inquiries as yours of the 19 May 1960. In this instance, however, I feel that any contribution toward clarification of public opinion might be beneficial.

I do not believe you can commit a national policy that you would, or would not continue surveillance flights in the future. I would only agree to cessation of observation activities whenever the Soviet Union

agrees to desist its own spying effort. Our foreign airbases are certainly no different in character from the Soviet embassies in Mexico City, Havana, Cuba, or Washington, D. C., where spying activity is directed towards the United States.

Appeasement of Khrushchev in regards to the U-2 flight, would certainly serve no useful purpose. Preventive war is no solution to any problem and certainly is incompatible with our national conscience.

Regarding the fate of Francis Gary Powers, I would naturally exhaust all diplomatic possibilities of obtaining his release either before or after trial. In the event this would appear to be unproductive, there certainly must be some Russian undercover agent, well thought of, who could be picked up in exchange either secretly or after a pretty good publicity blast.

In answer to your last question, I do not believe that any one candidate is more capable than any other in dealing with Khrushchev, nor should they be called upon to have to deal on a personal basis. Negotiations should always be carried on through diplomatic channels and in the event we have no career diplomat capable of such negotiations, we could undoubtedly find someone like John L. Lewis, who in his prime, could probably have negotiated them to a standstill.

Marshall Long  
International Lift Slab Corp.  
Overland Park, Kansas

## Subscribers, Give Your Comments on DATA 1961 Schedule of Special Issues

You still have time to make yourself heard in relation to DATA's 1961 schedule. As of this date we have tentatively set up the following schedule from the cards, calls and letters being received from subscribers:

### DATA 1961 SCHEDULE (TENTATIVE)

January	ARDC (Air Res & Dvlp Cmd)
February	Bureau of Naval Weapons
March	NASA (Nat'l Aero & Space Admin)
April	FAA (Federal Aviation Agency)
May	Bureau of Ships
June	AMC (Air Materiel Command)
July	Navy ASW (Anti Submarine Warfare)
August	WADD (Wright Air Dvlpmnt Div)
September	Army Signal Corps
October	Army Transportation Corps
November	Air Force Electronics (Rome ADC & AFCCDD)
December	NRL-NOL-ONR (Naval Research Programs)

We have received a few letters from subscribers asking us to make special issues on such things as the West German defense forces, Japanese defense forces, suggestions of featuring large prime contractors in addition to featuring Government activities. What are your views on these ideas?

— DATA PUBLICATIONS



## Feature Editorial

DATA/AMC Issue

# INTERNATIONAL SUPPLY HOUSE

by Martin Caidin/DATA



CAIDIN AND YARNELL WITH "DEBBIE"

There will be no editorial by Martin Caidin for next month's ASW issue since Caidin, accompanied by photographer James Yarnell, will be flying his new star-spangled Beechcraft Model 33 DEBONAIR to each of the 48 continental United States on an extended trip. Object: to collect facts and photos for two new books Caidin will write. The first book will be titled "This Is My Land" wherein the Beechcraft will serve as a high vantage point over the U. S. The second book is still untitled. Marty left 1 June and will be back with us in time for the August Navy Astronautics issue of DATA.

ANY DESCRIPTION of the Air Materiel Command must run the risk of comparison with the realistic world of the industrial giants. And any time that such a comparison is made, there is always the shadowy suggestion that industry is business in its fullest sense of the word, but that whenever a man does a similar job while wearing a uniform, he remains on amateur status.

This causes a certain inevitable rumble among the men who perform the logistic miracle, every day of the week, every week of the year, of keeping the world's biggest business—the U.S. Air Force—operating at peak efficiency. For no matter how you slice the supply cake, the requirement of handling more than one and a half million items for every imaginable use in an organization that operates every second of

the year, in every part of the world, from below sea level to twenty miles above the earth, and under every condition of weather that could be dreamed of, is an endeavor that would drive some of our fabled "big business managers" to slightly more than distraction.

And there just isn't any comparison of the stock, when equipment ranges from pinhead size to a B-52 which fully loaded sags the scales at nearly 250 tons. Taking care of the store, buying new equipment, and shipping the requirements to every part of the globe is a task of awesome proportions not only in respect to sheer physical labor, but also in terms of cost of annual operation—a cool \$8 billion.

And what organization in civilian or industrial life can compare with this supply problem, and, at the same time, act as a general hardware store for thirty nations involved in the Mutual Defense Assistance Pact!

There's even more to the picture, for AMC is a close partner with the Air Research and Development Command. The relationship has been particularly bountiful, for AMC engineers, acutely aware of the need and use of equipment in the field, are particularly capable of assisting in the design, development, testing, and procurement of replacement material. This runs the gamut from ball bearings no larger than pinhead size to the jet engines that are mounted in our supersonic fighters (F-104) and bombers (B-58).

But it is the movement of military supplies that constitutes the heart and soul of AMC responsibility. Any such mission must have a criteria of performance, and with AMC it is a simple one. To be able to move *anything* that is needed, anywhere in the world, within a maximum of seven days of receipt of the request.

That AMC does its job, and does it well, is a cliché known before its writing; if the organization couldn't do the task it is assigned, the Air Force would long ago have suffered a deterioration in its globalwide operations.

Fact: The Air Force has been, and is now, operating its combat units at peak efficiency.

Conclusion: They're minding the store with a vengeance.

—MARTIN CAIDIN



### SPECIAL MESSAGE TO DATA READERS:

The aerospace era has brought new problems into military logistics and in particular to the Air Materiel Command.

Strategists now realize that a military force will have to fight with what it has ready to go when the first blow comes. There would be no time for a build-up.

AMC must maintain the constant readiness of every available weapon system. It must have every possible item of equipment ready for instant use. That is the job of Air Materiel Command in the aerospace era.

As the defense job increases in complexity, communication between industry and the Air Force will, in the nature of things, grow ever more specialized and difficult.

Directories of information, such as this one, which cut horizontally across an entire command, will help bridge this communication gap by pinpointing the precise person or activity you need to reach on any specific problem.

In meeting our commitment to keep the combat forces instantaneously ready, we depend heavily upon our partners in industry. If you need any additional information about our operation, it is available at your nearest AMC Air Procurement District. These organizations are located in major cities throughout the United States.

*S. E. Anderson*  
S. E. ANDERSON  
General, USAF  
Commander, AMC



## Mission of the U.S. Air Force Air Materiel Command

AMC has the job of guaranteeing that Air Force units throughout the world are equipped for immediate action in the event of attack. It buys, supplies and maintains 1,500,000 separate items of equipment, ranging from ballistic missiles to ball bearings. AMC manages \$35 billion worth of assets.



## AMC Budget APPROPRIATION SUMMARY (\$ in Millions)

Sym- bol	Description	FY 59	FY 60	Pro- jected FY 61
3100	Aircraft and Missile Procurement	6,643.5	xxx	xxx
3200	Aircraft and Missile Support.....	2,220.0	xxx	xxx
3010	Aircraft Procurement .....	xxx	4,084.6	2,994
3020	Missile Procurement .....	xxx	2,540.6	3,024
3080	Other Procurement .....	xxx	1,109.6	1,057
SUB-TOTAL PROCUREMENT				
	APPROPRIATIONS .....	(8,863.5)	(7,734.8)	(7,075)
3300	Military Construction (P341).....	.7	3.3	2.4
3400	Operation and Maintenance.....	1,820.1	1,735.1	1,750.2
3500	Military Personnel .....	6.1	6.8	6.6
3700	Reserve Personnel .....	1.3	2.0	1.7
3840	Air National Guard.....	1.7	2.7	1.8
1111080	Military Assistance Program.....	73.4	60.7	38.8
TOTALS .....		10,766.8	9,545.4	8,876.5



## The Big Picture of AMC

**A**IR MATERIEL COMMAND, a global giant, has the job of honing down military logistics from their traditional crawl to the split-second tolerances of a missile age.

The reason: *Another war, if one comes, will be fought with whatever is at hand when the first siren wails.* A weapon system that is temporarily out of commission at that instant may never be used.

Since no one knows how long the cold war burden will last, AMC has a second responsibility almost as exacting as the first: *It has to find new ways to get more weapons potential from the dollar budget the nation can afford for peacetime defense.*

Both tasks require unorthodox methods, and AMC aims to please. It keeps probing for better ways of doing things.

### DATA PROCESSING AT AMC

Right now, the command is in process of adding a *Directorate of Data Systems*. This will be devoted to handling the electronic brains which AMC first put to work in 1954.

Now one of the nation's largest users of electronic data processing equipment, AMC employs 18 large-scale, 10 medium and 29 small-scale computers. It has them humming away on every conceivable logistics problem, from a uniform supply catalog to the requisitioning of spare parts for the latest experimental ballistic missile.

To guarantee that combat units are constantly poised for action with whatever they need, AMC long ago supplemented human judgment and shifted part of the load to machines. Instead of casting the supply sergeant's jaundiced eye over the field requisition, the Air Materiel Command substituted the revolutionary doctrine that *the customer—the military customer, that is—is usually right.*

That meant a unit overseas could transmit an order for a spare part over a wireless transceiver network and have its order automatically processed and filled. Unless the item happened to be critically short, the human brain never interposed its carping judgment.

The order went through and was filled—if necessary by air shipment. The requestor's weapon systems stayed in readiness.

Now electronic computers begin to take over the processing of orders. They have many other uses as well. They calculate the need for spare parts with the precision of an insurance company working out its life expectancy tables.

That way the right number of spares can be ordered at the right time and with minimum waste.

### "HI-VALU" AND "LO-VALU" SUPPLY SYSTEMS

Not that AMC distrusts human brains. It has worked out a system so they can be conserved and used where they will do the most good. To avoid wastage of talented supervision on "popcorn" supply, AMC several years ago instituted its "hi-valu" and "lo-valu" supply systems.

Items marked "lo-valu" get minimum attention but are handled under standing procedures that set up routine safeguards.

Those in the "hi-valu" category pick up all the special attention that is saved.

Since AMC has some 1,500,000 different supply items to watch over, the saving is important. Roughly 180,000 men and women make up the AMC complex around the world, many of them civilians. During fiscal 1959, some \$50 billion in contracts were under AMC administration. Purchases that year totaled \$10 billion.

### WEAPON SYSTEM CONTRACTING

Although the buying ranges down to screwdrivers or thumbtacks, most

of AMC's purchasing—from the dollar standpoint—involves the extremely complicated weapon systems that make up today's deterrent strength.

When possible, competitive bidding is used but, naturally, when such complicated weapons are involved most purchasing has to be effected through negotiated contract.

In such procurement, experienced buying is essential, both to guarantee economy and performance and to assist the industrial contractor in working out his problems.

To save taxpayer dollars, AMC in the recent past has been experimenting with incentive devices, even when the negotiated contract is in a highly experimental area where no contractor can be expected to absorb all the risk himself.

One method is to encourage the contractor to assume a percentage of risk, with the understanding that he will share the same percentage of any saving he manages under the agreed, anticipated cost.

So far, it works.

On old-style, cost-plus-fixed-fee contracts, the costs generally exceed the estimate. On the new shared risk contracts, the estimate is being underreached more often than overreached.

The method puts the profit motive to work in unleashing creative effort to improve efficiency and save money. Prime beneficiary, of course, is the American taxpayer.

Other refinements will come. The goals AMC chases are unattainable. One is 100 per cent readiness with every weapon the combat commands can use. The other is elimination of all waste.

Yesterday's orthodoxy won't bring nearer the accomplishment of either. That's why AMC is constantly rewriting the book and looking for new ways of doing things. ■





## A Case of Contracts

THE question is often asked: "Why are there so many negotiated contracts?" And, in terms of dollar value, 86.4% of Department of Defense contracts are of the negotiated variety. This is obviously high. However, the reason for this situation lies in the fact that the overwhelming amount of the procurement dollar is spent for highly technical equipment—the B-52 and B-58 aircraft, the ATLAS and POLARIS missiles, the complex radars, the aircraft carriers, nuclear-powered subs, etc., and the research and development behind them. These items do not come cheaply and such complicated and constantly changing items cannot be purchased by formal advertising method.

### NEGOTIATION DOES NOT REMOVE COMPETITION

There is the impression in the minds of some people that the use of negotiation means the absence of competition. I would like to emphasize that under our regulations procurement by negotiations does not remove the requirement for competition to the maximum practicable extent. And we do get competition. Not always the purely mechanical competition of "who has the lowest price" as in formal advertising, but a competition just as real. All competent companies are requested to participate. The best brains that these companies have in science, in management, and in production are concentrated on the question how to convert our military requirements into operational weapons in the shortest possible time.

### CONTRACTORS REPRESENT AN INVESTMENT

In many of our major weapon programs, the contractors selected acquire engineering and production facilities and experience that would be extremely costly, both in dollars and time to duplicate. In these cases, as a practical matter we are committed to a particular contractor or a group of contractors for the



**MIGHTY ATLAS** stands ready on its launching pad at the "Cape". Weapons like this must be negotiated but subsystems still present opportunities.

duration of these programs. I think it would be agreed that if we needed some additional B-52 bombers, it would not make sense to go to a company other than the one tooled up for the production.

The annual budget for the Department of Defense for all purposes is more than \$40 billion a year. In fiscal year 1959, more than \$25 billion was obligated in contracts for goods and services. About 6,700,000 individual procurement transactions took place.

### AMC BUYS THOUSANDS OF ITEMS

We are in the business of buying thousands of items ranging from normal housekeeping items such as hammers and nails to the most complex military weapons—aircraft, ships, missiles. There is no one method of procurement nor any one type of contract that can be used exclusively to cope with the situation.

Of the 6,700,000 Defense procurement transactions during 1959, some 5,300,000 were new contracts. Of these, 281,000 were given formally advertised action and 5,000,000 received negotiated contracts. Of the negotiated contracts, 4,800,000 were small purchases of \$2500 or less.

### NEGOTIATION REQUIRED ON \$2500 OR LESS CONTRACTS

Negotiation is required by law for contracts of \$2500 or less to save administrative costs. But, here again, this does not mean there was no competition. Simplified forms are used and reasonable solicitation from qualified concerns is required.

### DEFENSE PREFERS FIXED PRICE CONTRACTS

The contract preferred by Defense is the firm fixed price contract. Whenever a sound estimate of cost of performance can be made at the time of placing the contract, this type is employed. Since it is basically nothing more than exchanging so many dollars for so many items, it is the easiest and least costly to administer.

### COST-PLUS-FIXED FEE

On the other hand, when an item is new and the contractor has not previously manufactured it, we may use a fixed price contract providing for redetermination of price or a cost-plus-a-fixed-fee contract. The rapidly changing technology of our missile and space programs is requiring a much greater use of this last type contract.

### INCENTIVE CONTRACT

We also find ourself using the incentive contract. It provides higher profits to a contractor where he reduces his costs during performance and a lower profit where his costs increase over the originally established target costs. This form of contract is employed where there is a sufficiently long period of performance to permit achievement of substantial cost reductions.

### PERFORMANCE INCENTIVE CONTRACT

Then we have a newer type contract called a *performance-incentive* contract in which the contractor receives an increase in his fee to the extent that he produces a better item than actually required under the contract.





# Subcontracting in the AMC Complex

AS everyone knows, North American Aviation is producing the Air Force's HOUND DOG missile.

You see this fact mentioned in the press from time to time. This isn't quite true though.

It's only partially true, a considerable oversimplification.

If you were going to properly profile HOUND DOG, it would go like this:

## Assembly & Test

North American Aviation  
Downey, Calif.

## Power Plant

Pratt-Whitney Aircraft  
Division  
United Aircraft Corp.  
Hartford, Conn.

## Hydraulic Oil Heat Exchangers, Air-To-Air Heat Exchangers and Valves

AiResearch Manufacturing Co.  
Los Angeles, Calif.

## Valves

General Controls Co.  
Glendale, Calif.

## Variable Inlet Control System

Marquardt Aircraft Co.  
Van Nuys, Calif.

## Heat Exchangers

Stewart Warner Corp.  
Chicago, Ill.

If you're going to do business with the Government, it is just as important—more so, in many cases—to know what is underneath the crust as well as the surface trappings.

Some mighty lucrative contracts might be lurking in the part of the iceberg that's submerged.

And iceberg may seem like a very proper terminology to some who seem to have been running into some chilling walls in attempting to land Government business.

You might find the situation warming up for you though if, instead of trying to hit this glacier head-on, you made proper contract with lower-strata sources.

Your best bet in getting a "from top to bottom" look at a Government project, if you've no inside pipe lines into Washington, is to contact the Small Business Specialist

connected with the Governmental procurement office interested in the particular project.

If he's knowledgeable at all—and it's really part of his job—he should be able to reel off for you the companies behind any project up and down the line. If there are any special needs and requirements waiting to be fulfilled, he should know about this too.

Incidentally, the title *small business specialist* is something of a misnomer. He's really there to help any business man seeking contract help and information.

Listed below are some more Air Force missile projects and their contract profiles:

## ATLAS

### Technical Assistance

Space Technology Laboratories  
Los Angeles, Calif.

### Airframe & Assembly

Convair Division, General  
Dynamics  
San Diego, Calif.

### Nose Cone

General Electric Co.  
Philadelphia, Pa.

### Propulsion

Rocketdyne Division  
North American Aviation  
Canoga Park, Calif.

### Guidance

General Electric Co.  
Syracuse, N. Y.  
Burroughs Corp.  
Paoli, Pa.  
Arma Corp.  
Garden City, L. I.

### Warhead

Atomic Energy Commission  
Los Alamos, New Mex.

### Fuze

Sandia Corp.  
Albuquerque, New Mex.

## MINUTEMAN

### Assembly & Test

Boeing Airplane Co.  
Seattle, Wash.

### Nose Cone

AVCO Manufacturing Co.  
Lawrence, Mass.

## Guidance

North American Aviation  
Autopetics Division  
Los Angeles, Calif.

## Propulsion Unit

Thiokol Chemical Corp.  
Ogden, Utah  
Aerojet General Corp.  
Sacramento, Calif.  
Hercules Powder Co.  
Wilmington, Del.

## QUAIL

### Assembly & Test

McDonnell Aircraft Corp.  
St. Louis, Mo.

### Aircraft Modifications

Boeing Aircraft Co.  
Seattle, Wash.

### Power Plant

General Electric Co.  
Lockland, Ohio

### Support Equipment

Bell Aircraft Corp.  
Niagara Falls, N. Y.

### Electronics

Ramo-Wooldridge Corp.

## TITAN

### Airframe Assembly & Test

Martin Aircraft Corp.  
Denver, Colo.

### Technical Assistance

Space Technology Laboratories  
Los Angeles, Calif.

### Nose Cone

AVCO Manufacturing Co.  
Lawrence, Mass.

### Guidance

Bell Telephone Laboratories  
Whippany, New Jersey  
Sperry-Rand Corp.  
Lake Success, L. I.  
A. C. Spark Plug Co.  
Milwaukee, Wis.

### Propulsion

Aerojet General Corp.  
Sacramento, Calif.

### Armament

Atomic Energy Commission  
Los Alamos, New Mex.  
Sandia Corp.  
Albuquerque, New Mex.

### Auxiliary Power Unit

Aerojet General Corp.  
Sacramento, Calif.



**THOR FOR STORAGE**—Sleek THOR IRBM rolls from belly of C-124 for storage and maintenance at Bernardino Air Materiel Area's overhaul hanger.

## AMC Field Activities

**H**ERE ARE the purchasing points of the Air Materiel Command and some of the main types of items each of these places is interested in:

### **WRIGHT-PATTERSON AIR FORCE BASE, DAYTON, OHIO**

Airborne Rocket Launcher  
In-Flight Control Tester  
Power Supply  
Solid Propellant Cartridge Starter  
Auxiliary Wheel Assembly (tip and nose)  
Liquid To Gas Oxygen Converter  
Aircraft Safety Belt  
Hangar Maintenance Docks  
Airborne Radio Navigation Equipment  
Airborne Intercommunication System  
Airborne Radar Equipment  
Navigational Instruments  
Flight Instruments  
Engine Instruments  
Photographic Equipment  
Simulator Trainers

### **AIR FORCE DEPOT, GENTILE AIR FORCE STATION, DAYTON, OHIO**

Craftsmen Measuring Tools  
Inspection Gages  
Sets, Kits, Outfits Of Measuring Tools  
Knobs And Pointers  
Airborne Radio, TV Communication Equipment  
Airborne Intercommunication & Public Address System  
Airborne Radar Equipment  
Electrical & Electronic Equipment Components  
Electrical Meters, Laboratory, Shop  
Test Instruments Equipment  
Chemical Analysis Instruments

Physical Properties Testing Equipment

Laboratory Equipment And Supplies

Scales & Balances

Miscellaneous Instruments

### **AIR FORCE DEPOT, MALLORY AIR FORCE STATION, MEMPHIS, TENNESSEE**

Railroad Equipment  
Trailers & Cycles Motor Vehicles  
Tractors  
Vehicular Equipment Components  
Engines, Turbines & Components  
Engine Accessories  
Ground Gas Generating Equipment  
Cranes, Road Clearing & Cleaning Equipment  
Materials Handling Equipment  
Firefighting Equipment  
Lubrication & Fuel Dispensing Equipment  
Vehicle Lights & Fixtures

### **MIDDLETOWN AIR MATERIEL AREA, OLMSTED AIR FORCE BASE, PENNSYLVANIA**

Parachutes & Aerial Pickup, Delivery & Cargo Tie-Down Equipment  
Service & Trade Equipment (dry cleaning, laundry, etc.)  
Navigational Instruments  
Flight Instruments  
Automatic Pilot Mechanisms & Gyro Components  
Engine Instruments  
Time Measuring Equipment

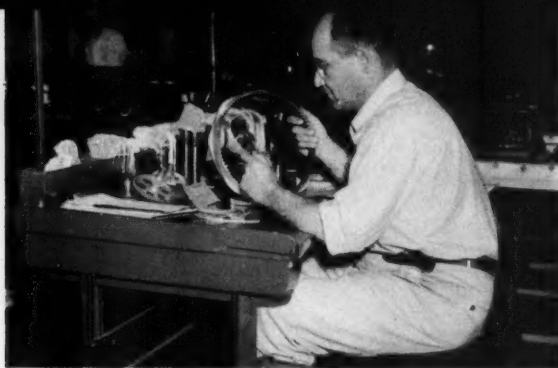
Optical Instruments  
Geophysical & Astronomical Instruments  
Drafting, Surveying, Mapping Instruments  
Liquid & Gas Flow, Liquid Level & Mechanical Motion Measuring Instruments  
Pressure, Temperature, Humidity Measure & Controlling Instruments  
Chemical & Chemical Products  
Food Preparation & Servicing Equipment  
Gas Cylinders  
Tents & Tarpaulins  
Clothing  
Fuels, Lubricants, Oils (other than petroleum products)

### **MOBILE AIR MATERIEL AREA, BROOKLEY AIR FORCE BASE, ALABAMA**

Launching, Landing & Ground Handling Equipment  
Small Water Craft, Pontoons, Floating Docks  
Ship & Marine Equipment  
Gas Turbines & Jet Engines  
Miscellaneous Engine Accessories  
Mechanical Power Transmission Equipment  
Special Industry Machinery  
Agricultural Machinery & Equipment  
Rope, Cable, Chain, Fittings  
Refrigeration & Air Conditioning Equipment  
Compressors & Vacuum Pumps  
Power & Hand Pumps  
Furnace, Steam Plant & Drying Equipment, Nuclear Reactors



**SACRAMENTO AIR DEPOT**—Aircraft cowlings sit in neat piles at AMC's Sacramento depot.



**WARNER ROBBINS**—Cam ring for R-2800 aircraft engine is examined for flaws at Warner Robbins AMA.

Plumbing, Heating & Sanitation Equipment  
 Water Purification & Sewage Treatment Equipment  
 Pipe, Tube, Hose, Fittings  
 Valves  
 Motor Vehicles Maintenance & Repair Shop Equipment  
 Miscellaneous Maintenance & Repair Shop Equipment  
 Hand Tool & Tool Boxes  
 Hardware & Abrasives  
 Prefab Structures & Scaffolding  
 Lumber, Millwork, Plywood, Veneer  
 Construction & Building Materials  
 Alarm & Signal Systems  
 Cabinets, Bins, Lockers  
 Floor Covering  
 Office Machines & Supplies  
 Musical Instruments, Phonos, Radios  
 Recreational & Athletic Equipment  
 Cleaning Equipment & Supplies  
 Preservatives & Sealing Compounds, Adhesives  
 Containers, Packaging & Packing Supplies  
 Non-Metallic Fabricated Materials  
 Metal Bars, Sheets, Shapes  
 Ores, Minerals & Primary Products  
 Signs, Adv. Displays, Ident. Plates

**OGDEN AIR MATERIEL AREA, HILL AIR FORCE BASE, UTAH**

Ammunition & Explosives  
 Loading Shocks & Struts  
 Wheels & Brakes  
 Ammo Maintenance & Repair Shop Equipment  
 Training Aids  
 Armament Training Devices  
 Boxes, Packages, Special Containers for Ammo, Explosives

**OKLAHOMA CITY AIR MATERIEL AREA, TINKER AIR FORCE BASE, OKLAHOMA**

Hydraulic, Vacuum & De-Icing System Components  
 Air Conditioning, Heating, Pressurizing Equipment for Aircraft  
 Aircraft Engine Cooling System Components  
 Aircraft Engine Air & Oil Filters, Strainers & Cleaners  
 Turbosuperchargers

**ROME, N. Y., AIR MATERIEL AREA, GRIFFIS AIR FORCE BASE, NEW YORK**

Telephone & Telegraph Equipment  
 Teletype & Facsimile Equipment  
 Ground Radio & TV Equipment  
 Ground Radio Navigation Equipment  
 Ground Intercom & Public Address System  
 Sound Recording & Reproducing Equipment  
 Ground Radar Equipment  
 Underwater Sound Equipment  
 Visible & Invisible Light Communication Equipment  
 Grounder Countermeasures Radio, Radar  
 Headsets, Handsets, Mikes, Speakers  
 Electric Hardware & Supplies  
 Cable, Cord & Wire Assembly for Communication Equipment  
 Electric Wire & Power Dist (except motors, converters, generators)  
 Lighting Fixtures & Lamps  
 Ground Meteorological Instruments & Apparatus  
 Photo Supplies

**SACRAMENTO AIR MATERIEL AREA, McCLELLAN AIR FORCE BASE, CALIFORNIA**

Tanks, Aircraft Auxiliary Fuel Pylon Assemblies, Drop Tank Generators & Generator Sets (gasoline & diesel-engine driven)

**SAN ANTONIO AIR MATERIEL AREA, KELLY AIR FORCE BASE, TEXAS**

Atomic Ordnance  
 Engine & Fuel System Components  
 Electric Motors  
 Electric Converters  
 Aircraft Lights & Fixtures  
 Hazard Detecting Instruments & Apparatus

**WARNER ROBINS AIR MATERIEL AREA, WARNER ROBINS AIR FORCE BASE, GEORGIA**

Weapons  
 Aircraft Propellers  
 Tires & Tubes  
 Tire Rebuilding & Repair Materials  
 Bearings  
 Woodworking Machinery & Equipment  
 Metalworking Machinery  
 Rubberworking Machinery  
 Textile Industries Machinery  
 Rescue & Safety Equipment (except firefighting)  
 Centrifugals, Separators; Pressure & Vacuum Filters  
 Driers, Dehydrators, Anhydrators—Thermal  
 Air Purification Equipment  
 Fire Control Maintenance & Repair Shop Equipment  
 Weapons Maintenance & Repair Shop Equipment



## Profiles of AMC Key Executives



ANDERSON

### GENERAL SAMUEL E. ANDERSON Commander, Air Materiel Command

With General Anderson piloting, there's an open-door policy around Wright-Patterson. His office door is, literally, always open. He feels that this enables him to get a better over-all picture of his command. His staff agrees that he is perhaps the easiest general to reach at AMC.

General Anderson is constantly amazing neophytes with his tremendous capacity for retaining facts and figures on all subjects. He is capable of organizing and presenting figures instantaneously, and has corrected many a mistaken subordinate.

A crack marksman, General Anderson likes nothing better than a weekend quail hunt. He is equally handy with rod and reel; has pulled in big ones—both in Atlantic and Pacific waters. The General takes golf seriously; plays to win. He scores in the low 80's.

Indoors, the General occasionally plays bridge. When there isn't a foursome he enjoys a game of gin rummy or canasta. As in sports, General Anderson takes his game seriously and plays to win.

Although he is a good sportsman, General Anderson is more well known as a lover of things classical. His



McKEE

record collection is loaded with symphonies and classical piano pieces. He is most proud of his role as a patron of the arts, having brought to this country the piano genius Tong Il Han. The General's favorite entertainment, however, is the ballet, and he can be found in a choice box at the theatre whenever a good company hits town.

Mrs. Anderson is kept pretty busy, as the General enjoys good foods, especially wild quail and seafood. The missus also selects most of her husband's clothes. Apparently her taste in this line is excellent, as General Anderson is proclaimed one of the best dressed officers in the AMC complex.

The Anderson's have two daughters; Ellen, 23, who is married to Capt. James E. Briggs, Jr., USAF; and Elizabeth, age 21½. The General hails from Greensboro, North Carolina, where his mother still lives.

General Anderson graduated with the class of 1928, West Point, and then entered the Air Corps Flying School. His duty has been quite comprehensive. Prior to taking command of AMC he was Commander of ARDC. He has experience with air maintenance, bombardment, training and pursuit.





DAVIS



CASSADY

**LIEUTENANT GENERAL WILLIAM FULTON McKEE**  
Vice Commander, AMC

The man with the Irish name just loves Mexican food. When his mouth gets too hot from South-of-the-Border food, he turns to French cuisine. When it comes to sports his taste is less varied. Lt. Gen. McKee is a golfer through and through like most at Wright-Patterson.

General McKee is acknowledged one of the most experienced and able administrators in the Air Force. He has had experience in coast artillery, harbor defense, conservation, training and intelligence, aircraft interception, anti-aircraft and air transport. In 1957 his abilities were honored when he was presented the first annual Distinguished Management Award of the Air Force Association.

The General keeps himself constantly busy with civic and national activities. He has a keen interest in international affairs and politics, on which subjects he does as much reading as possible when off duty.

General McKee has worked as closely with the Navy as is possible without being converted. After his graduation from West Point, he was commissioned as 2nd Lieutenant in the Coast Artillery Corps. Later he served as a Battery Commander of the Harbor Defenses of Los Angeles. He also served as a Battery Commander assigned to the Naval Operating Base, Norfolk, Va.

General McKee is a great believer in military order and formality. He demands complete integrity from others, and is irrepachable himself. He is noted for his respect for other intelligent people and their opinions.

**BRIGADIER GENERAL WAYMOND A. DAVIS**  
Director of Procurement and Production, AMC

During the week General Davis is responsible for purchasing some of the most up-to-date equipment in the Defense system. On the weekends, however, he reverts to the primitive and enjoys hunting with bow and arrow.

General Davis has his own woodworking shop in which he makes and repairs his own bows and arrows as well as furniture for the house. Excepting his love for primitive weaponry AMC's Director of Procurement is very up-to-date in all his likes and dislikes. He has no great interest in art of any kind, nor does he appreciate classical music. He digs popular music and can tolerate modern jazz.

In the outdoor department General Davis is a golfer, although "Strictly a duffer," he says. He is more handy with a gun than with a golf club, and is an excellent skeet and trap shooter. (He's never tried it with bow and arrow). The General likes his cooking a la wide-open too. He is handy with charcoal and enjoys barbecued food.

Like most Texans, Waymond Davis is a positive thinker. He doesn't get along with people who say something can't be done. In his job he often has to do the impossible, and *knows* it can be done. He likes people who agree with him on this point. His Directorate operates as a well-run team. Loyalty and the ability to work with a team is a must in the people with whom he deals.

General Davis hails from Sweetwater, Texas. He is married to the former Josephine Newman, and they have 2 sons; Austin, 21 and Richard, 26.

**BRIGADIER GENERAL EMMETT BUCKNER CASSADY**  
Director Personnel and Support Operations, AMC

Barnstorming General Cassady started flying at the wet-behind-the-ears age of 18. Two weeks after he got his first training plane it was a total wreck. At the age of 20, with about 25 hours of flying time under his belt, Emmett Cassady became co-owner and operator of the Red River Flying Service. It was during this period that he enlisted in the Air Corps Reserve.

Harvard Graduate Cassady is an avid student of history who looks to the future by reading science fiction. He feels that a whole new vocabulary is being born in these works.



**BOGART**



**HALE**

The rough-riding General's favorite motto is: "In action be primitive; in strategy, far sighted." About AMC; "Problems are seldom solved," say General Cassady. "Our job is to keep pounding away at them, making dents until we are fully satisfied with our efforts."

General Cassady moves fast; taking less than 15 minutes for lunch. He's a hard man to catch off duty. At home, he isn't particular about what he eats, as long as it is cooked by Mrs. Cassady. His favorite breakfast food, however, is grits.

The General has served with the Air Force as far north as Newfoundland and as far south as Uruguay. He has also served in Italy. He represented the Department of Defense at the coronation of Pope John the 23rd. The General resigned from active duty for two years in 1939 and 1940, during which time he was a co-pilot for Braniff Airlines.

General Cassady lives on the base at Wright-Patterson with his wife, the former Willie Odom, and with their 17 year old daughter, Ruth Ann. He has 2 other children, Lt. William Cassady, USAF, and Mrs. Colleen Gunter.

**MAJOR GENERAL FRANK A. BOGART**  
**Director of Supply**

In his spare time, General Bogart is a man-about-home. Driving by his house at Wright-Patterson, you are likely to see the General working in the garden. He has a green thumb, and enjoys making plants grow.

His love nature carries over into his favorite pastime, oil painting. Although he has tried his hand at portrait work, his specialty is landscapes; and the General has seen some nice ones.

Upon graduation from West Point, he was stationed at Fort Barrancas, Florida as Battery Officer with the 13th Coast Artillery. Then he was switched to Corregidor, before the fighting began.

Perhaps General Bogart also brushed some New England landscape onto canvass while he was a graduate at MIT. The General has also served in Moscow, as Logistic Planner for the U.S. Military Mission, Asst. Chief of Staff, Logistics at HDQS Alaskan Command, and spent 3 happy years in Paris as Chief, Plans and Programs Branch, Logistics Division for SHAPE.

General Bogart is a better than average golfer, and plays wherever he is stationed.

**COLONEL SAMUEL HALE, AMC**  
**Chief of Programming and Management**

Colonel Hale wants to see the whole world. He has seen a good part of it already—the hard way. During World War II, he was a squadron commander in the European Theater. He flew 26 combat missions and acquired 250 combat hours. For this he earned the Distinguished Flying Cross, the French Croix de Guerre, and was promoted to Lt. Colonel. He now travels under more pleasant conditions and takes every opportunity that comes along, both in the line of duty and when on leave.

The Colonel is a sports enthusiast; plays a good game of golf. He also likes to watch the local baseball, football, and basketball games.

Around the house, Colonel Hale pushes a wicked lawnmower, and enjoys every minute of it. Inside, he occasionally reads a best-selling novel, but normally his reading tastes tend to the news-type magazine and technical publications. He and Mrs. Hale have a son and a daughter.

The Colonel speaks Spanish, and has served as Chief of the Military Assistance Advisory Group in the Dominican Republic. He was there for four years.

A native of Chicago, Samuel Hale went to Military Academy and thence to the University of California, Berkeley where he earned his MA in Business Administration. In 1948 he returned to the same University and studied production management for two years, while still a Lt. Colonel in the Air Force.



# The Reorganization of WADC into WADD

*Actually a part of the Air Research & Development Command (ARDC), WADD is an important part of the Wright-Patterson Complex*

THERE IS SCARCELY a product on the market today which has not come out with a "new model" or version. But in most cases, the "newness" is merely an additive. While the advertisements promote the newness of the additive they go to great lengths to insure that you recognize that the basic product—in all its greatness—is still there.

Then, there are other "new" products which actually represent little more than a layer-upon-layer package of known ingredients. But even here the original, individual ingredients—though combined—are shown to maintain their integrity and to act independently to solve separate parts of the problem.

However, at times a really new product is placed on the market; a product which contains the familiar, proved ingredients, plus new elements—all combined according to a new formula. Such a product is a new entity with its own distinctive identity. The strength and power of this type of product is thus greater than any of its individual elements, or a simple combination of them.

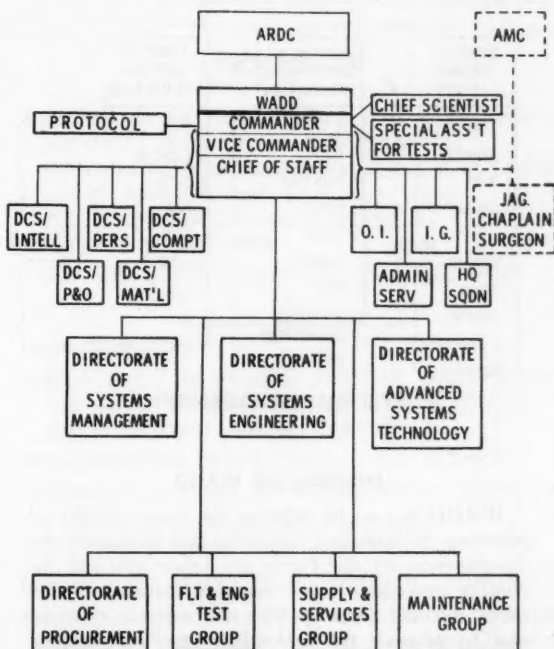
The Wright Air Development Division is just such a new product.

WADD combines the individual strengths of the former Wright Air Development Center and the ARDC Directorate of Systems Management. It amalgamates the dynamic force of the men and women, experience, background, and facilities of WADD with the proved competence of the systems management teams of ARDC. To this amalgamation has been added the "new ingredient" of over-all WADD management authority and responsibility to simultaneously view and satisfy both immediate and long-range weapons systems requirement.

## WADD INTERNAL STRUCTURE

The strength of this amalgamation is insured by an internal structure consisting of three principal mission Directorates: Systems Management, Systems Engineering, and Advanced Systems Technology.

To cut the time required for developing weapons systems, and at the same time to insure an even higher level of achievement (in terms of performance, reliability, and military payoff)—all within the concept of concurrency—the first two Directorates concentrate the talents and skills of both Systems Managers and Systems Engineers into coordinated teams for individual, day-by-day frontal attacks on each weapon system in WADD's program.

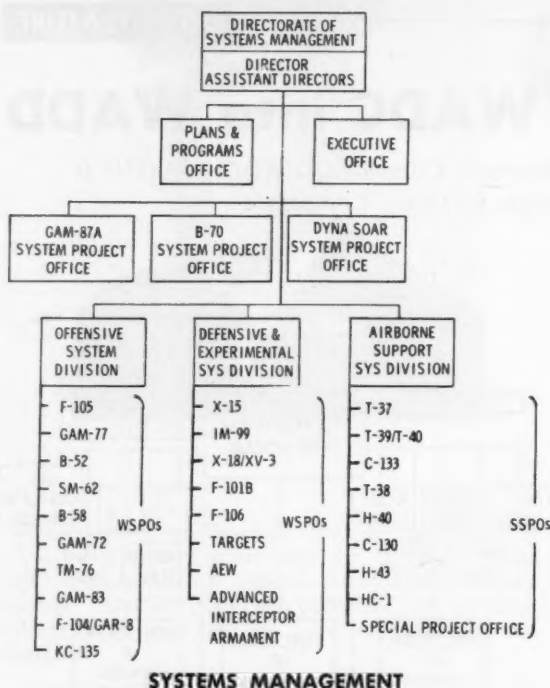


RELATIONSHIP OF WADD TO ARDC AND AMC

And, within the third Directorate, the Directorate of Advanced Systems Technology, other engineers, and scientists, as well as long-range planners, concentrate their talents on planning and meeting the systems requirements of the future, and advancing the technology required for the development of those systems—in the shortest possible time.

Under this method of operation the greatest days in the life of the WADD Commander will always be (1) when he sees a weapon system leave WADD and enter the operational inventory, and (2) when he sees technology advanced to the point where an "advanced weapon system concept" can be transferred for development and management to the Directorates of Systems Management and Systems Engineering.

Intimately associated with the three primary operating Directorates is the Flight and Engineering Test Group. It is through this Group that the work of the laboratories and of the Management and Engineering Divisions is extended into the air, in a carefully integrated test and experimental program for subsystems, components and new techniques.

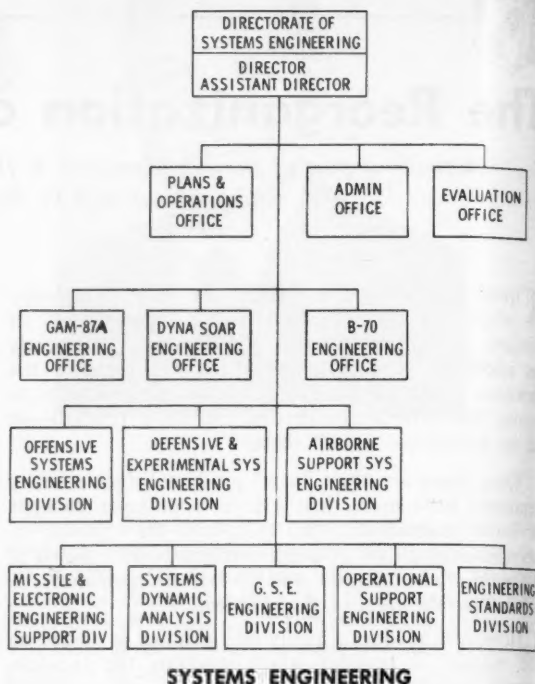


#### MISSION OF WADD

*WADD has as its mission the responsibility of planning, formulating, initiating and managing the development of Air Force aerospace systems, including aerospace craft, missiles associated with them, manned space systems and support systems; and to advance the technology required for the development of those systems.*

#### STAFF AND MANAGEMENT PERSONNEL IN WADD

COMMANDER, Maj. Gen. Stanley T. Wray.  
VICE COMMANDER, Col. W. R. Grohs.  
CHIEF SCIENTIST, J. E. Keto.  
SPECIAL ASSISTANT TO THE COMMANDER FOR TESTS, Col. H. P. Huglin.  
CHIEF OF PROTOCOL, I. L. Schwartz.  
CHIEF OF STAFF, Col. R. H. Macklin.  
DEPUTY CHIEFS OF STAFF FOR:  
PLANS AND OPERATIONS, Col. D. S. Dunlap; Assistant, Col. K. O. Chilstrom; Technical Director, J. L. England.  
INTELLIGENCE, Col. F. R. Feeney.  
PERSONNEL, Col. T. V. Prochazka.  
MATRIEL, Col. D. B. Diehl.  
COMPTROLLER, Col. M. P. Anderson.  
STAFF OFFICERS:  
INSPECTOR GENERAL, Col. R. S. Morrison.  
DIRECTOR OF INFORMATION, Lt. Col. M. Frank.  
DIRECTOR OF ADMINISTRATIVE SERVICES, Lt. Col. C. L. Thomas.



HQ SQUADRON COMMANDER, Lt. Col. D. A. Wolfe.

DIRECTOR OF SYSTEMS MANAGEMENT, Brig. Gen. J. R. Holzapple; Assistant Director, Col. J. J. Smith; Technical Directors, P. R. Murray and J. A. Boykin, Jr.

PLANS AND PROGRAMS OFFICE, Chief, Col. J. M. Herndon; Assistant Chief, A. D. Olson.

EXECUTIVE, Lt. Col. James R. Dale.

ADMINISTRATION OFFICE, Chief, Capt. C. F. Gieswein.

GAM-87 SYSTEM PROJECT OFFICE, Chief, Col. J. S. DeWitt; Assistant Chief, M. E. Lambrecht.

B-70 SYSTEM PROJECT OFFICE, Chief, Col. E. L. Bishop; Assistant Chief, T. H. Goss.

DYNA SOAR SYSTEM PROJECT OFFICE, Chief, Col. W. L. Moore, Jr.; Assistant Chief, C. B. Hargis, Jr.

OFFENSIVE SYSTEMS DIVISION, Chief, Col. A. E. Krieger, Jr.; Assistant Chief, R. S. Blocker.

B-58 WSPO, Chief, Col. C. H. Bolender; Assistant Chief, J. S. McCollom.

B-52 WSPO, Chief, Col. R. A. Erdin; Assistant Chief, G. W. Bollinger.

DEFENSIVE EXPERIMENTAL SYSTEMS DIVISION, Chief, Col. L. F. Upson; Assistant Chief, J. Leet.

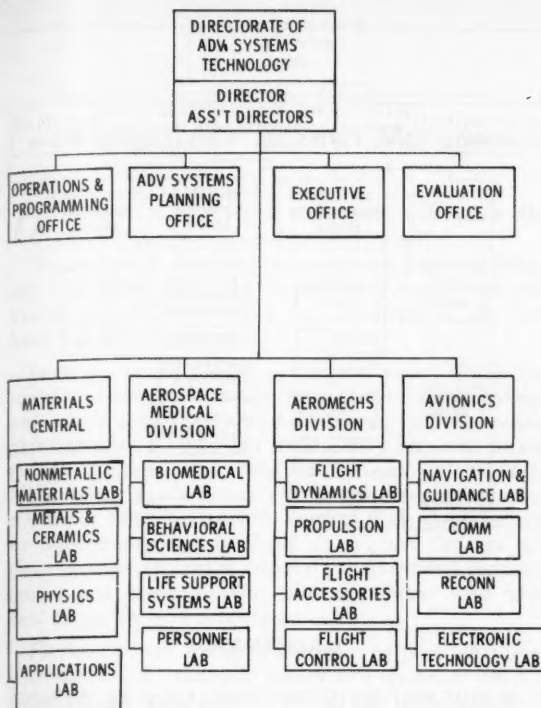
BOMARC WSPO, Chief, Col. J. M. Coulter.

F-101 WSPO, Chief, Maj. G. W. Lavie; Assistant Chief, M. R. Davis.

F-102 & F-106 WSPO, Chief, Col. J. E. Andres.

AIRBORNE SUPPORT SYSTEMS DIVISION, Chief, Col. M. B. Hammond; Assistant Chief, C. W. Kuehne.





### ADVANCED SYSTEMS TECHNOLOGY

DIRECTOR OF SYSTEMS ENGINEERING, Col. F. J. Ascani; Assistant Director, Col. W. S. Chairsell; Technical Director, L. J. Charnock.

PLANS AND OPERATIONS OFFICE, Assistant Chief, E. A. Wolfe.

EXECUTIVE, Lt. Col. L. R. Hayes.

EVALUATION OFFICE, Chief, E. B. Bell.

GAM-87 ENGINEERING OFFICE, Chief, Lt. Col. P. K. Bryant; Assistant Chief, N. R. Rosengarden.

DYNA SOAR ENGINEERING OFFICE, Chief, W. E. LaMar.

B-70 ENGINEERING OFFICE, Chief, A. L. Sea; Assistant Chief, E. T. Rockwell.

OFFENSIVE SYSTEMS ENGINEERING DIVISION, Chief, J. G. Rizos.

DEFENSIVE AND EXPERIMENTAL SYSTEMS ENGINEERING DIVISION, Chief, W. L. Sullivan.

AIRBORNE SUPPORT SYSTEMS ENGINEERING DIVISION, Chief, P. B. McKee.

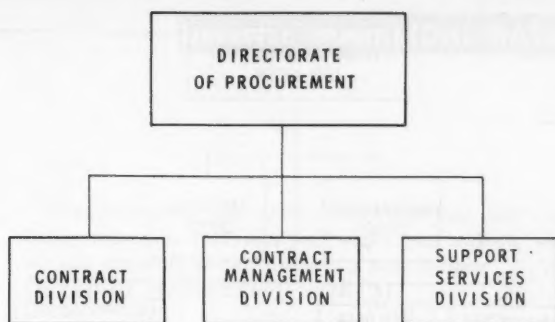
MISSILE AND ELECTRONIC ENGINEERING SUPPORT DIVISION, Chief, Col. F. B. Carlson.

SYSTEMS DYNAMIC ANALYSIS DIVISION, Chief, R. W. Hommel.

G.S.E. ENGINEERING DIVISION, Chief, Col. L. R. Anderson; Assistant Chief, H. A. Miles.

OPERATIONAL SUPPORT ENGINEERING DIVISION, Chief, Col. W. L. Leverette; Assistant Chief, T. J. Tobiasen.

ENGINEERING STANDARDS DIVISION, Chief, Col. C. F. Begg.



### PROCUREMENT

DIRECTOR OF PROCUREMENT, Lt. Col. T. G. Watkins; Assistant Director, Lt. Col. E. B. Reed.

CONTRACT DIVISION, Chief, Lt. Col. E. B. Reed (Acting); Assistant Chief, Capt. L. A. Wilson.

CONTRACT MANAGEMENT DIVISION, Chief, William E. Boger.

SUPPORT SERVICES DIVISION, Chief, L. L. Grier.

DIRECTOR OF ADVANCED SYSTEMS TECHNOLOGY, Col. A. L. Wallace; Assistant Director, Col. J. R. Harris; Technical Director, E. Kotcher.

PROGRAMMING OFFICE, Chief, Col. L. B. Smith.

ADVANCED SYSTEMS PLANNING OFFICE, Chief, Col.

F. A. Holm; Assistant Chief, F. Orazio.

EXECUTIVE, Lt. Col. F. Graham.

EVALUATION OFFICE, Chief, John G. P. Callahan.

MATERIALS CENTRAL, Chief, Col. W. A. Anderson; Assistant Chief, Col. H. A. Messman; Technical Director, E. M. Glass.

NONMETALLIC MATERIALS LABORATORY, Chief, R. T. Schwartz.

METALS AND CERAMICS LABORATORY, Chief, R. R. Kennedy.

PHYSICS LABORATORY, Chief, L. F. Salzberg.

APPLICATIONS LABORATORY, Chief, Lt. Col. H. C. Hamlin.

AEROSPACE MEDICAL DIVISION, Chief, Col. J. P. Stapp; Technical Director, Dr. F. W. Berner.

BIOMEDICAL LABORATORY, Chief, Col. A. I. Karstens; Technical Director, Dr. J. Heim.

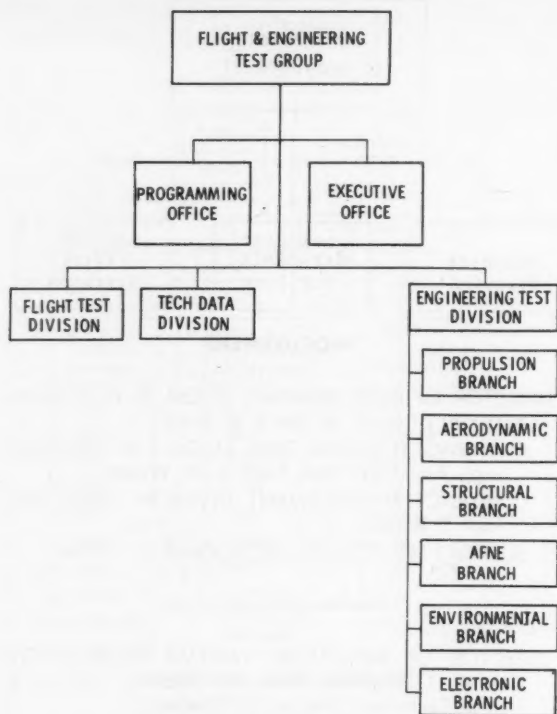
BEHAVIORAL SCIENCES LABORATORY, Chief, Dr. W. F. Grether; Assistant Chief, Lt. Col. H. L. Parris.

LIFE SUPPORT SYSTEMS LABORATORY, Chief, W. H. McCandless; Assistant Chief, Lt. Col. K. F. Troup.

PERSONNEL LABORATORY, Chief, Col. F. E. Holdrege, Jr.; Technical Director, A. Carp.

AEROMECHANICS DIVISION, Chief, Col. J. M. Silk; Technical Director, E. C. Phillips.

FLIGHT DYNAMICS LABORATORY, Chief, Col. J. P. Taylor; Technical Director, H. A. Magrath.



#### FLT & ENG TEST GROUP

PROPULSION LABORATORY, Chief, Col. E. A. Hawkins; Technical Director, W. Worth.

FLIGHT ACCESSORIES LABORATORY, Chief, Col. R. Jones; Technical Director, L. H. Hildebrandt.

FLIGHT CONTROL LABORATORY, Technical Director, C. R. Bryan, Jr.

AVIONICS DIVISION, Chief, Col. R. D. Keator, Technical Director, F. L. Holloway.

NAVIGATION AND GUIDANCE LABORATORY, Chief, Col. T. J. Cummins, Jr.; Technical Director, R. J. Nordlund; Assistant-to-the-Chief, R. F. Fischer.

COMMUNICATIONS LABORATORY, Chief, Col. J. B. Rippers; Technical Director, L. Hallman.

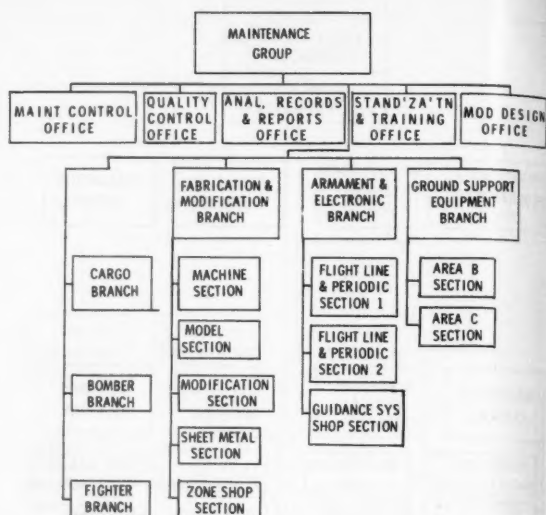
RECONNAISSANCE LABORATORY, Chief, Col. H. S. Heavner; Technical Director, E. B. Woodford.

ELECTRONIC TECHNOLOGY LABORATORY, Chief, Lt. Col. J. K. Schloss; Technical Director, H. V. Noble.

FLIGHT AND ENGINEERING TEST GROUP, Commander, Col. Joseph Davis, Jr., Assistant Commander, Col. Thomas Omohundro; Technical Director, Hugh S. Lippman.

PROGRAMMING OFFICE, Chief, Thomas A. Reynolds.

EXECUTIVE OFFICE, Maj Alec J. Lester.



#### MAINTENANCE

FLIGHT TEST DIVISION, Chief, Lt. Col. W. W. Plourd; Assistant Chief, Lt. Col. Arthur C. Jackson, Jr.

TEST DATA DIVISION, Chief, Lt. Col. James G. Dedakis.

ENGINEERING TEST DIVISION, Chief, Col. Robt L. Colligan, Jr.; Assistant Chief, Carl E. Reichert.

PROPULSION BRANCH, Chief, Charles L. Word.

AERODYNAMIC BRANCH, Chief, Demetrius Zonars; Assistant Chief, Joseph P. Doyle, Jr.

SUPPLY AND SERVICES GROUP, Commander, Lt. Col. Donald R. Frohlich.

SUPPLY BRANCH, Chief, Raymond R. Fuller.

SERVICES BRANCH, Chief, Lt. J. J. Adams.

OPERATIONS OFFICE, Chief, Capt. Harlo A. Limpach.

MAINTENANCE GROUP, Commander, Col. K. T. Barthelmess; Assistant Commander, Lt. Col. D. K. Barker.

MAINTENANCE CONTROL OFFICE, Chief, Lt. Col. Frederick B. Gervais.

QUALITY CONTROL OFFICE, Capt. Francis A. Nagle, Jr.

ANALYSIS, RECORDS AND REPORTS OFFICE, Chief, Capt. Billy W. Howells.

STANDARDIZATION AND TRAINING OFFICE, Chief, Capt. Jackie L. Ashley.

MODIFICATION DESIGN OFFICE, Chief, T. J. McGree.

CARGO BRANCH, Chief, Capt. Horace J. Schickram.

BOMBER BRANCH, Chief, Major Emory C. Lavender, Jr.

FIGHTER BRANCH, Chief, Capt. William D. Largent.

ARMAMENT AND ELECTRONIC BRANCH, Chief, Capt. Donald J. Burke.

## ... Straight talk to Sales Management

**O**UR MAGAZINE is a store that will stock the wares that you, our subscribers, want.

We at DATA have desired, since we began publication over three years ago, to provide a useful tool and trading post of information for executives in the Defense-Industry Complex.

In so doing we follow a different tack. While the various existing publications in the aviation, electronics and missile fields talk about hardware, we talk mostly about people . . . who has control of what, who to see to talk business, and biog background information. While other publications cover aviation, electronics, missiles or what-have-you in vertical trade publications, we provide coverage in depth of a given Defense activity showing the entire picture for diversified industry leaders and higher ranking military officers who have need to see the entire complex.

Further, we are trying at all times to give functional information . . . material which will make or save a dollar for our subscribers. We do not present general interest material to be taken home over the weekend to be read in a hammock. Instead we publish source and reference material to be used on-the-job at the reader's desk and to be stored close at hand in his working reference file for frequent use.

We are constantly striving to make DATA more worthwhile, to give you more for your dollar each month. Those of you who struggled with us through the early editions of typewriter type format do not have to be reminded of this fact.

It is because of our desire to provide you with ever better material, stuff that will make you money, that we are proud to unveil for you a new feature . . . the DEFENSE MARKETING FORUM.

We have always felt that the way to make money for our readers in the prime contracting and subsystem contracting industries was not merely to tell them of contracts already released but to show them how they can do their own information gathering, their own market research and in that way get in on the ground floor with Government activities and prime contractors.

It is for the reasons stated above that we have started this new feature, Defense Marketing Forum. We have been very fortunate in enlisting the services of the Planning Manager of one of the heavyweight prime contractors in the aerospace-electronics field as editor and moderator of the forum. With permission and cooperation from his corporation directors, our Defense marketing forum editor will impart to you some of the marketing procedures he has gleaned and proven to be effective during his many years of market research experience in the Defense-contracting field.

But remember, DATA is your store. Do you want us to stock this item? Read the initial article here and send us your comments. It's your forum, it's your book. Participate!

—M. Q. SMITH, Publisher

## The Real Meaning of Customer Orientation and a Program for Its Implementation

by Patrick Thomas/DATA

**T**O THOSE readers of DATA whose job is "Marketing Management" I make this unqualified statement: The continued success of your military business is now dependent upon the successful integration of a dynamic marketing management with a top technical staff.

If this thought hasn't yet occurred to you its high time you meditated on it . . . we are in a buyer's market and the situation is not likely to change.

### TRENDS

Briefly, let's review the facts of life in our fast-moving, inherently unstable business of Defense production:

#### 1. Conversion to electronics

At the current rate of development by 1970 better than 60% of the cost of a weapon system will be electronics or electronics associated.

#### 2. Demise of weapon system management

Weapons system management as it was practiced on the B-58 will give way to "Systems Integration Programs" as in the case of Boeing on DYNA-SOAR, and increased emphasis on "Payload and Test Contractors" such as Aeronutronics on AF's SCOUT Program 609A.

#### 3. Chopping up of the systems market into clearly defined subsystems

As the system market gets cut up into neatly labeled subsystem areas, recognized producers will find

it easier to achieve market dominance by emphasizing established capabilities. The strategic missile market, for example: *Nose Cones/G-E* and *Avco*; *Guidance/Autonetics*, *AC*, *Arma*, *G-E*, *Nortronics*; *Propulsion/Rocketdyne*, *Aerogjet*, *Thiokol*.

#### 4. Intense competition for unfunded studies

The unfunded studies on ARDC System Study Requirements may not amount to big dollars for three to five years, if at all, but will establish capabilities for future systems and hardware. They will be hard fought.

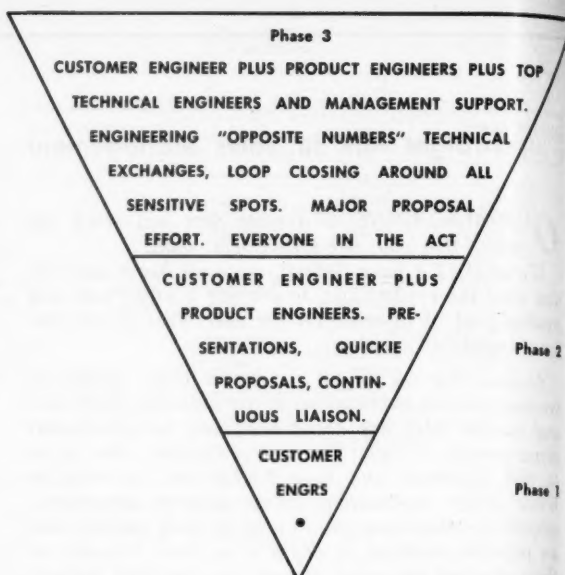
If your organization is still basically product oriented . . . if you think the terms "customer orientation" or "marketing concept" are clichés, you are subscribing to thinking which is part of the problem rather than the solution.

I can almost hear a chorus of voices saying "The Military will invariably buy the best technical approach . . . we are oriented to the missile product areas and this is a growth market." These are the symptoms of *Engineering Orientation* not based upon the integration of a strong marketing organization.

We, whose job it is to cover the Defense-marketing area, do not subscribe to the belief that either Engineering or Marketing should hold the whip hand, in fact, it seems to us that such thinking only prevents the kind of marriage that should take place between Marketing, Engineering and Finance. Yes, the Military will invariably try to buy the best technical approach—and if you have the best technical approach cost differences can usually be ironed out. BUT—unless your organization is basically CUSTOMER ORIENTED how can you possibly know your customer to the depth that you are sure that on a specific program you are placing proper emphasis on all of the sensitive agencies and personnel that must be sold on the fact that you have the best technical approach plus demonstrated capability and fair costs? What are your guidelines for convincing yourself that a new program will be a winner?

And when you enter a program do you build a synthesized organization chart—a road map—that pinpoints the inter/intra agency multi-level selling that must be done? If your organization is basically engineering-product oriented, then your answer to this question will probably be in the negative.

Naturally it is not my wish to imply that any firm should first decide on who their customers should be and then secondly decide what products or services they will offer them. It is the job of product planning and marketing development groups to look for new product areas and extensions for existing ones. Keep in mind that this writing is addressed to those DATA readers involved in sales management and, in the final analysis, it is the competency of this segment of the company that makes or breaks the firm. Engineering segments of the company may be oriented product-wise to *Particular facets of the missile market*, but for Sales to so state implies a staggering knowledge of the customer that no one company is likely to possess.



The Inverted Pyramid of Sales Activity

#### BEGINNING CUSTOMER ORIENTATION

Customer orientation begins with "account orientation" within the Government, Military and Contracting Industry. The prime question at this point is whether your marketing effort is so organized as to provide adequate sales coverage on an account basis.

Field representatives may or may not be utilized for technical sales. Washington representatives typically have many diverse functions attendant to sales support and hardly can be expected to maintain a high degree of technical competency over a broad product line. I therefore speak of "account orientation" from the basis of technical sales coverage such as implemented by customer, product or sales engineers. In this context, I will outline a philosophy of Defense Sales Management that is clear cut . . . that works . . . can be used with proper modifications by prime systems contractors, subsystem builders and component suppliers . . . and should be the basis for the overall market development function.

As part of the sales management organization you are faced with the problem of placing emphasis on the "right programs at the right time." Timing is critical for planning of initial contracts, technical presentations, the initiation of engineering research, etc. When you find you've got a "hot one" for either short or long term maturity, you should build an effort which is like an inverted pyramid in the growth of its scope.

The approach I will outline is based upon a firm pre-determination of product objectives and the following factors:



- (a) **Selectivity** — *not trying to be everything to everyone*
- (b) **Sensitivity** — *knowing your customers in depth*
- (c) **Conservatism** — *the realization that success breeds success and that success associates with success*
- (d) **Market Research** — *the basis for all coherent marketing planning and which must, in its proper utilization, provide timely inputs to Engineering, Sales Management and Finance.*

#### KEY ACCOUNTS — KEY PROGRAMS — KEY REQUIREMENTS

I call this program *Key Accounts — Key Programs — Key Requirements*, and it includes the following steps:

1. *Selection of Key Accounts*
2. *Determination of the Scope of Technical Sales Coverage Required*
3. *Account Assignments and Staffing if necessary*
4. *Process of Developing Sensitivity to Key Accounts and their programs*
5. *Analysis of the Key Programs of your Key Accounts*
6. *Determination of Key Requirements within the Key Program of your Key Accounts*
7. *Determination of your Key Programs as a result of Item #6 above.*

#### PRIME CONTRACTOR ACCOUNTS

Most contractors are in total or large part subsystem suppliers. Therefore, let's set up a hypothetical case. Assume you are a subsystem supplier of associate prime contractor size who is interested in business with a large prime.

Prime Producer "X", a now broadly diversified air-frame contractor on the West Coast, is in the billion dollar plus class. In practically anyone's book this company has divisions which should be rated as key accounts. What is the scope of coverage required for those divisions of the company falling within a given geographic area . . . say Seattle, the San Francisco Bay Area, Los Angeles and San Diego? If Prime Producer X would be someone like Boeing, you are—in a real sense—dealing with four large companies . . . those in the areas mentioned. It becomes clear that it is necessary to determine the *bid potential* of not only Prime Contractor X at his home and field offices but of the other potentially key or important accounts in the particular geographic areas discussed. *Each of these geographic sections is a market area which must be handled as such due to costs of sales coverage and desire for time-efficiency.*

Prime Producer X becomes a new key account for you, our hypothetical subsystem supplier, only if it has a much higher than average bid potential. Depending upon the business you're in the bid potential figure will vary, but it is possible to estimate the adequacy of sales coverage in the following manner: (1) *Divide gross sales of your division or company by the total number of technical sales representatives, excluding field service support.* In major subsystems this figure usually works out to somewhere between \$2. and \$3 million per man per year. (For example, a division of a company that I know is currently doing roughly \$150 million annually, has 40 front line applications engineers (product oriented) and 10 customer engineers (account oriented) and this averages out to \$3 million per man. Component companies may be doing well to average \$500,000 per man. But in systems sales there are no "sales closers" and the value for sales per man is only an index.

(2) *The next step is to study Prime Producer X's sales record and programs.* Estimate or determine actual funding, i.e., estimate the gross procurement dollars and the dollars you'll have a chance to bid on. (Market analysts can be a big help to sales management by breaking down market potentials by using contractors, not just by military services.) *The sales of a division of a successful Government contracting company usually averages \$10,000-\$15,000 per employee if offsite procurement is not unusually high or if the firm itself is not basically an R&D company.* As division sales are not ordinarily reported separately in an annual report or elsewhere, it is necessary to develop such rules of thumb.

Perhaps it turns out that you estimate your bid potential at 0.5% of Prime Producer X's sales. (3) *Now you should estimate bid potential of other contractors in the area . . . and (4) Compare bid potential by account with your average sales per year per man (by index figure).*

Say Prime Producer X has a firm and growing potential currently at \$30 million per year. Assuming that you are averaging a 20% realization of success in your bids it can be estimated that Prime Producer X has a realizable potential of \$6 million per year for you. Assume your average sales per man are \$2 million per year. Does this indicate that Prime Producer X requires three full-time men? Not at all. But if you are now calling on this account on an average of only once in six weeks, it does indicate a deficiency in your sales coverage.

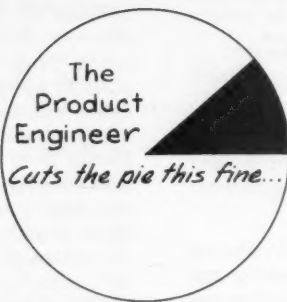
#### MILITARY ACCOUNTS

Military accounts are key for a set of entirely different reasons. It is self evident that in your particular product area there are control points for technical evaluation, R&D, funding, etc. *An agency of the Government may procure little of itself but be key by virtue of its functions and responsibilities.* For example, the Air Force Navigation and Guidance Test Center at Holloman AFB, New Mexico will not be a big permanent center but it certainly is key to suppliers of navigation and guidance systems due to the related nature of its work.



#### CUSTOMER ENGINEER'S TIME PER ACCOUNT

Key accounts take 30% to 100% of a Customer Engineer's time. The Customer Engineer can talk on all product areas, define potentials, discover programs, and arrange for required customer support functions.



#### PRODUCT ENGINEER'S TIME PER ACCOUNT

The Product Engineer does actual engineering and proposal writing. He should be able to talk intelligently on any technical phase and to discuss costs. A typical ratio is four Product Engineer types to every Customer Engineer type.



#### ENGINEER'S TIME PER ACCOUNT

We have two buffers—the Customer Engineer and the Product Engineer—before we have to use the Engineer. Keep engineers at home, don't take them out on the road. Bring the new business in to them with the efforts of the Customer Engineers and Product Engineers.

In the Defense contracting field it can be shown that a company doing \$150 million a year on four related product areas would not have over 30 accounts which should be considered key . . . key in the sense that each account would require the services of 30% to 100% of a man's full time. You must be extremely selective on this matter for the purpose of this exercise is not only to determine how large a technical sales staff is required but just how this coverage should be directed.

At this point it should be stressed that the Military, for very sound reasons, is exerting more and more control over its programs. You should always attempt to achieve a one to one probability of success on a program at the key military or space agency accounts . . . even if this means diluting your efforts somewhat at the prime contractor's level. The Air Force, biggest military contractor at this writing, has made its position clear on "teaming" and you would do well to make their thinking on this subject, your thinking.

#### APPLYING CUSTOMER ORIENTATION

When you have studiously evaluated the depth of coverage required for all important geographic areas and deployed forces accordingly, you are well on the road to customer orientation.

Let's assume, for our hypothetical case, that you now have adequate coverage at Prime Contractor X . . . a technically trained representative spends 50% of his time at this account. You are now starting to "get next" to this customer, too. At Company X when a project goes into "Advanced Analysis" it has gone "upstairs"—it's hot! Your sales engineer finds that Project "Y", although unfunded, has a 50 man task force on it!

As sales manager you note that Project "Y" is getting similar treatment at most of your other key accounts. In short, you're now in step number four by our program—developing trained, selective sensitivity.

Prime Producer X is like most other contractors today—he is bidding constantly on a wide variety of programs in an effort to maintain and expand market command in certain product lines and break into others.

#### VECTOR YOUR ENERGY

You can't possibly "go" with Prime Producer X and all your other key accounts on all of their key programs. Nor should you attempt to do so. You're going to have to go back to market research and engineering to take a close look at the requirements of Prime Producer X's key programs and, in context with those key programs at all your key accounts, determine which key programs hold key requirements for you. The process of doing this will determine what your key programs should be.

We keep emphasizing the word "key" here for a purpose. While you should work on other accounts, at least 95% of your sales effort should be directed to the key account structure. It will mean dropping certain accounts. As your sales grow it will be possible to develop new key accounts. *The secret is selective and adequate pre-contact service. No company has unlimited resources that will allow "in-depth" coverage of every possibility.*

So, you see what this comes down to . . . the utilization of progressively finer sieves to determine your courses of sales action: *Key Accounts—Key Programs—Key Requirements.*

This whole process is aimed at reducing risk in the decision-making process. For the subsystem supplier it is a recognition of the value of taking your cues from successful primes. And while planning must be flexible enough to allow for healthy opportunism, the lack of a coherent plan based upon radar monitoring of your key accounts will result in opportunism becoming the dominant course of action. And if the first news you've heard of a new program in a leading trade journal chances are you're at least a year or two late for the first team. If your market analysis is just a "clipping service" you'd better take action . . . and fast.

*The subject for next month's DATA Defense Marketing Forum is Market Intelligence . . . what to look for, where to find it and how to obtain it.*

# DATAGRAM

## AIR/SPACE DATA

### OLD DOG LEARNS NEW TRICKS

F-86 Sabre Jet, now with added rocket thrust travels at supersonic speeds, climbs to 60,000 ft. Mission is also improved from that of a fighter to that of an interceptor. ///Rocketdyne/

### CHANGE OF COMMAND FOR BIG BIRDS

Launch Operations Directorate will replace ABMA Missile Firing Lab's duty for launch of JUPITER, REDSTONE, and PERSHING. Hdqs will be at Marshall, operational date; 1 July, 1960. Dr. Debus is named director of LOD. ///DATA/

### CONTRACT

Army to Chrysler; \$6.6 million contract for JUPITER repair parts.

## COMMUNICATIONS/ELECTRONICS DATA

### ASTRONAUTICAL HEARING AID

New radio transmitter worn in vest-pocket of space travellers picks up, relays physiological data to flight surgeons. ///DATA/

### NEW AGENCY: DEFENSE COMMUNICATIONS

Head of DCA will be R/Adm William D. Irvin. The new agency was recently set up to improve communications within DOD. It will eliminate duplications among the services and provide more and better communications per dollar investment. ///DOD/

### CONTRACTS

Army to Motorola; \$10.9 million for radio switching systems.  
Army to Gen Instruments; \$2 million for radio sets and antenna accessories.  
Navy to GE; \$14 million contract for production of new long-range height-finding radar units. Unit is believed to be longest range radar being produced for Navy. It simultaneously detects range, azimuth, and altitude of target. ///GE/

## GROUND SUPPORT DATA

### PROPOSALS FOR BALLISTIC MISSILE DEFENSE

ARGMA is receiving solicited proposals on a ballistic missile defense system for field Army engaged in ground combat. ///Army/

### CONTRACT

Army to Raytheon; \$1½ million for HAWK ground support equipment.



## **LOGISTICS/MATERIALS DATA**

### **NEW CAMERA STUDIES EXPLOSIONS**

Army camera has exposure speed of one five-billionth of a second. Sees shock waves in explosion. Purpose: find more effective methods of detonation and better explosives. ///Army/

## **MISSILE DATA**

### **LOW COST APACHE ROCKET MOTOR SUCCESSFUL**

In a recent test the rocket delivered a 35 lb payload to an altitude of nearly 40 miles. Total weight of the rocket is 223 lbs. In large quantities APACHE's sell for \$1500. Further tests continue by New Mexico State University at White Sands. ///Thiokol/

### **CONTRACTS**

Army to Johnson, Drake & Piper; \$4 million contract for ATLAS silos at Vandenberg.  
Army to Zachry; \$20 million contract for construction of ATLAS launch complexes at Abilene, Texas.  
Army to Chrysler; \$1½ million for REDSTONE missile components.  
Army to Raytheon; \$13.6 million for HAWK missile system. (in 3 contracts)  
Army to Western Electric; \$4.3 million for work on NIKE-HERCULES program.  
Navy to Raytheon; \$23.6 million for continued production of SPARROW III missiles.

## **SEA WARFARE DATA**

### **AIR SUPPORTED BOAT DEMONSTRATED**

The hydroskimmer type vessel is supported by air, propelled by conventional methods. When underway, only two skegs for guidance and the twin screws touch the water. The boat is capable of speeds over 25 mph. Eventually, it is foreseen that this method of propulsion may be used for larger vessels, such as an ASW craft, battleship, and aircraft carrier. The method allows greater speeds, once the ship gets off the water. ///Navy/

### **CONTRACTS**

Navy to Gebbs; \$3.9 million for one oceanographic research ship.  
Navy to Peterson Builders; \$2.8 million for two coastal minesweeps.  
Navy to Avondale Marine Ways; \$16 million for construction of two escort vessels.  
Navy to Boeing Aircraft; 2 million for construction of a hydrofoil patrol craft. To be carried out at Seattle, Washington.

### **TV ASW BY CBS**

The Twentieth Century TV series crew recently completed two weeks at sea. They filmed ASW operations of Task Force Alpha. The film will be shown to TV viewers in October. ///DATA/



# DATALOG OF MISSILE, SPACE, AND DETECTION PROJECTS

## MILITARY MISSILES, June 1960

### ★ New information this month

AA—Air-to-Air  
AS—Air-to-Surface  
AU—Air-to-Underwater

SS—Surface-to-Surface  
SA—Surface-to-Air  
SU—Surface-to-Underwater  
UU—Underwater-to-Underwater

ICBM—Intercontinental Ballistic Missile  
IRBM—Intermediate Range Ballistic Missile  
ECM—Electronic Countermeasures

#### ARM AF

Type: AS  
No contracts announced.

New Anti-Radar Missile now in early study phase.  
FY '60 funding is \$23 million.

#### ARROW Army

Type: AS  
prime: Grand Central Rocket  
guide: Unguided  
power: Grand Central Rocket

Fired from helicopter or a/c. Powered flight to 5000 ft., coasts to 120,000 ft. Enters target area vertically, making it hard to spot and destroy. Ideal surprise attack missile.

#### ASROC Navy

Type: UU  
prime: Minn.-Honeywell

Solid rocket-powered nuclear torpedo. Sked. for fleet use Jan. '61. Launched from underwater, ASROC surfaces—flies to target and submerges to hit.

#### ASTER Navy

Type: SU  
prime: Applied Physics Lab/Vitro  
guide: Ford  
power: Allegheny/Rocketdyne  
range: 30 mi.

Ship launched TERRIER carries ASTER torpedo to surface destination, where torpedo drops off for attack. May replace SUBROC. Now in R&D.

#### ASTOR Navy

Type: UU  
prime: Westinghouse

Now in R&D. ASW Nuclear rocket torpedo.

#### ATLAS SM-65 AF

Type: ICBM  
prime: Convair  
guide: GE/Burroughs/Am. Bosch  
power: North American  
nosecone: GE  
weight: 260,000 lbs.  
length: 75 ft.  
dia: 10 ft.  
range: 5500 naut. mi.

ATLAS coffin launching complex now operational at Vandenberg AFB. Second coming soon at Warren AFB, Calif. Rocketdyne's new MA-3 propulsion system has passed AF test. The lighter, more powerful system will power advanced series "E" Atlas.

#### BOMARC IM-99 AF

Type: SA  
prime: Boeing  
guide: Westinghouse  
power: A—Marquardt  
B—Thiokol  
funding: \$421.5 million on BOMARC-B in FY 61  
speed: Mach 2.7  
range: 500 mi.

★ Recently unveiled mobility has caused little re-consideration on dropping BOMARC.

#### BULLPUP ASM-N-7 Navy GAM-82-A AF GAM-83-A

Type: AS  
prime: Martin  
guide: radio command/Republic  
power: Thiokol  
weight: 250 lbs.  
range: 2.5 mi.

★ Additional contract to Martin—\$3.3 million for BULLPUP production. This easily handled bird requires no checking from factory to firing.

#### CLAM AF

Type: AS  
power: Ramjet  
No contracts announced.

Chemical Low Altitude Missile listed in AF missile specifications book. Possible use as target drone.

#### CLAYMORE Army

Type: SS  
No contracts announced.

★ Accelerated dvlpmt of CLAYMORE expected. This hand carried anti-personell rocket is ideal for field use.

#### COBRA USMC

Type: SS  
prime: Boelkow Entwicklungler, W. Germany (distrib. U.S.: Daystrom)  
guide: wire guided  
power: Solid BE  
weight: 24.6 lbs.  
speed: 191 mph.  
range: 1 mi.

★ Daystrom is turning out 1000 COBRAS a month for USMC. Possibility that Army will buy COBRA very strong now that SS-11 is ruled out.

#### CORPORAL SSM-A-17 Army

Type: SS  
prime: Firestone  
guide: Gilfillan  
power: Ryan  
speed: Mach 3.5  
range: 75 mi.

★ Giving way to SERGEANT. Many CORPORAL birds being used as targets for NIKE family.

#### CORVUS XASM-N-8 Navy

Type: AS  
prime: Temco  
guide: Texas Instrument  
power: Reaction Motors  
range: Over 100 mi.

★ Several thousand CORVUS birds will be produced with pre-packaged liquid propellant powerplant. Used against short targets with capability of homing on enemy radar. Will be carried by F8U-2N fighter.

#### CROSSBOW AF

Type: AS  
prime: Northrop  
guide: Bendix  
power: Westinghouse  
range: 200 mi.

★ This turbojet bird is in dvlpmt by AF to home on enemy radar. All details are highly classified.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

(2nd Sheet)

MILITARY MISSILES, June 1960

★ New information this month

## DAVY CROCKETT Army

Type: SS  
prime: Rock Island Arsenal

★ FY '61 production funds: \$20.6 million. Bazooka-launched, can be hand-carried or truck mounted. Has low nuclear yield warhead. DAVY CROCKETT has alternate range by switching launching tubes.

## EAGLE JAAM-N-10 Navy

Type: AA  
prime: Bendix  
guide: Bendix/Sanders  
power: Aerojet  
speed: Mach 4  
range: 100 mi.

★ Competition for launching a/c narrowed to Vought and Grumman, with modified A2F a possibility.

## FALCON GAR-1, -2, -3, -4, -9, -11 AF

Type: AA  
prime: Hughes  
guide: Hughes  
power: Thiokol  
speed: Mach 2+  
range: 5 mi.

★ New dvlpmt by Thiokol permits operation under wider temperature ranges. GAR-3 is operational, SUPER FALCON GAR-3 in test. GAR-2 and 4 are infrared guided. GAR-9 is radar guided with nuclear warhead. Long range GAR-9 now being cut back in production. GAR-11 soon to be installed on F-102 Delta Daggers, giving them nuclear capability. F-102 will also carry GAR-10 and GAR-2A.

## GENIE MB-1 AF

Type: AA  
prime: Douglas  
guide: Hughes  
power: Aerojet  
speed: Mach 4  
range: 1.5 mi.

Now being carried by F-89J, F-101B and F-106. First operational nuclear warhead air-to-air bird, GENIE is pointed downward at launch, curves up at target. Being replaced by guided FALCON missiles.

## HAWK M-3 Army

Type: SA  
prime: Raytheon  
guide: Raytheon  
power: Aerojet  
range: 22 mi.

★ FY '61 production funds: \$97.4 million, of which a large part will go to dvlp advanced HAWK with better performance.

## HONEST JOHN M31, XM50 Army

Type: SS  
prime: Douglas  
guide: unguided  
power: Hercules Powder/Thiokol  
range: 12 mi.

★ FY '61 production funds: \$22 million. Operational with U.S. forces in Europe. LITTLE JOHN to replace HONEST JOHN for less than maximum ranges. XM50 is increased ranged M31 with greater accuracy.

## HOUND DOG GAM-77 AF

Type: AS  
prime: North American  
guide: Autonetics  
power: Pratt & Whitney (J52)  
funding: \$170 million in FY61  
speed: Mach 1.7  
range: 500 mi.

Comparable Soviet missile is said to be USSR's KOMET D. Longer range version is two-stage XGAM-87A, now in R&D.

## JUPITER SM-78 Army-AF-NASA

Type: SS  
prime: Chrysler  
guide: Ford Instrument  
speed: Mach 10  
power: Rocketdyne  
range: 1,500 mi.

Operational with Army and with SAC. Receiving FY '60 funding from NASA as space launch vehicle.

## LACROSSE SSM-A-12 Army

Type: SS  
prime: Martin  
guide: Federal Tel.  
power: Thiokol  
speed: Mach 2  
range: 20 mi.

★ FY '61 production funding: \$8.4 million. LACROSSE is operational, now in Germany—with two battalions forming part of the NATO shield. It is multi-purpose in that it can be used against open troops as well as fortified targets.

## LITTLE JOHN Army

Type: SS  
prime: Emerson Elec.  
guide: unguided  
power: Hercules Powder  
range: 10 mi.

Limited operational use with troops. Funding for FY '60 \$38½ million.

## LOBBER Army

Type: SS  
range: 15 mi.

Designed for attack and supply missions.

## LOKI Army

Type: AS  
prime: Grand Central Rocket  
guide: unguided  
power: Marquardt

★ Helicopter-launched anti-tank weapon. Fixed fins. Needle-nosed warhead. Contract for phase I motors released—\$33,800.

## LULU Navy

Type: AU  
Prime: In house

★ Now operational, this air-dropped anti-sub nuclear missile is highly classified by Navy.

## MACE TM-76 AF

Type: SS  
prime: Martin  
guide: AC Spark/Goodyear  
power: Allison (J33-A-41)  
funding: \$39.8 million in FY 61. No renewal.

range: (B) 1200 mi.

★ Request funding for MACE, FY '61 totals \$31½ million.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

## MILITARY MISSILES, June 1960

### ★ New information this month

#### MAULER Army

Type: SA  
 prime: Convair  
 guide: Raytheon  
 ★ Anti-missile missile for field use. Truck mounted. Second phase contract has been awarded to Convair: \$5½ million. Sub-contract to Burroughs for transportable computer system.

#### MINUTEMAN SM-80 AF

Type: ICBM  
 prime: Boeing  
 guide: Autonetics  
 power: Thiokol/Aerojet/Hercules Powder  
 nosecone: AVCO  
 ★ Total of \$390 million to be spent on MINUTEMAN in FY '61. Inertial guidance system has been successfully ground tested. Now ahead of sched, MINUTEMAN will be operational in underground launchers about mid '62. Studies underway to test feasibility of transporting MINUTEMAN by railroad.

#### MISSILE A Army

Type: SS  
 No contracts.  
 range: 70 mi.  
 Delay in contract announcement due to proposals to combine MISSILE A with MISSILE B.

#### MISSILE B Army

Type: SS  
 No contracts  
 Range: 10-20 mi.  
 Will replace LITTLE JOHN. Still in dvlpmt stage.

#### MISSILE C Army

Type: SS  
 No contracts  
 range: 70-90 mi.  
 Similar to SERGEANT. In dvlpmt.

#### MISSILE D Army

Type: SS  
 No contracts  
 Range: Over 500 mi.  
 Now in early dvlpmt.

#### NIKE-AJAX SAM-A-7 Army

Type: SA  
 prime: Western Electric  
 guide: Western Electric  
 power: Hercules Powder  
 speed: Mach 2.5  
 range: 25 mi.  
 Operational in U. S., Europe and Far East. Being replaced by NIKE-HERCULES. Non-nuclear.

#### NIKE-HERCULES SAM-A-25 Army

Type: SA  
 prime: Western Electric  
 guide: Western Electric  
 power: Hercules/Thiokol  
 funding: \$111.4 million in FY 61  
 speed: Mach 3.2  
 range: Over 75 mi.  
 Work continuing rapidly on conversion of NIKE-AJAX sites to NIKE-HERCULES. This fine weapons system appears slated for long retention in our anti-aircraft protection arsenal. Nuclear head.

#### NIKE-ZEUS XSAM-A-25C Army

Type: SA  
 prime: Western Electric  
 guide: Bell Telephone  
 power: Grand Central Rocket/Thiokol  
 range: 200 mi.

★ Additional \$18 million has been OK'd by DOD for transfer from emergency fund. Purpose: dvlp improved electrical and precision components for NIKE-ZEUS.

#### PERSHING Army

Type: SS  
 prime: Martin  
 guide: Bendix  
 power: Thiokol  
 range: 100-300 mi.  
 ★ Four successful test flights to date. FY '60 funding \$131.6 million.

#### POLARIS FBM Navy

Type: US-SS  
 prime: Lockheed  
 guide: GE  
 power: Aerojet  
 range: 1200 mi.  
 Successful tests under full guidance have been made. Firings of dummy POLARIS, 'DOLPHINS', underway to train crew prior to operational status. Expect at least one POLARIS sub to be operational in '60. Advanced program underway to increase accuracy. Movable nozzles are being dvlpd for this purpose.

#### QUAIL GAM-72 AF

Type: AS-ECM  
 prime: McDonnell  
 guide: radio command/Summers  
 power: GE (J85)  
 range: 200 mi.  
 Air-launched diversionary missile of extreme sophistication and complexity is valuable aid in protection of SAC bombers.

#### RAVEN XASM-9 Navy

Type: AS  
 No contracts announced.  
 range: 500 mi.  
 Proposed air-to-surface range: 500 mi. missile now under study. Project appears to be lagging.

#### REDEYE Army/USMC

Type: SA  
 prime: Convair  
 guide: Convair  
 power: Atlantic Research  
 Lightweight (18 lb.) infra-red guided bazooka-type missile. Army has high hopes for this relatively inexpensive and effective, easily-carried guided missile that can be fired from a soldier's shoulder, giving him better antiaircraft capability than ever before.

#### REDSTONE SSM-A-14 Army

Type: SS  
 prime: Chrysler  
 guide: Sperry Rand  
 power: Rocketdyne  
 speed: Mach 5  
 range: 250 mi.  
 ★ Now operational with U. S. troops in Europe. REDSTONE with TV camera has been successfully tested and fired in longest overland rocket flight ever attempted. Will use JUPITER C fuel tanks to increase range.

#### REGULUS I SSM-N-8 Navy

Type: SS  
 prime: Chance Vought  
 guide: AC Spark Plug  
 power: Allison (J33)  
 range: 500 mi.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

(4th Sheet)

## MILITARY MISSILES, June 1960

### ★ New information this month

Although cut in production, REGULUS I is aboard some ships and subs of the U. S. fleet and is operational. Biggest news with REG I, however, is not its current Navy dress but the fact that it has been used in "missile mail" tests by the Post Office Dept.

#### REGULUS II SSM-N-9A Navy

Type: SS  
prime: Chance Vought  
guide: Stavid/Sperry/AC  
power: GE (J79)  
range: 500 mi.

Much more powerful and larger version of REGULUS I, REG II has also been cut from Navy funding but also is being eyed by Post Office Department as speedy ("beyond Mach 2") missile mail carrier that could fly in any weather. Now being used in fleet as target drone.

#### SERGEANT SSM-A-27 Army

Type: SS  
prime: Sperry  
guide: Sperry  
power: Thiokol  
range: 75 mi.

★ FY '61 production funds: \$52.1 million. SERGEANT is now in production to replace Army's CORPORAL.

#### SHILLELAGH Army

Type: SS  
prime: Aeronutronics  
guide: Aeronutronics  
power: Picatinny Arsenal  
range: 8 mi.

★ Gyro for complex guidance system now being dvlpd by Telecomputing. Ideal for close-in support of troops.

#### SIDEWINDER AAM-N-7 Navy GAR-8 AF

Type: AA  
prime: Philco  
guide: Philco/GE  
power: Hercules Powder  
range: 7 mi.

Extremely popular infra-red homing missile is simple and rugged. SIDEWINDER-1C is advanced model with higher speed and greater range. Advanced model has interchangeable warhead—one with infrared guidance (IRA), the other with radar guidance (SARAH). All weather type SIDEWINDER, to be used on PHANTOM-2 fighter, now in R&D. Earlier models have been purchased by Jap Air Force.

#### SKY BOLT GAM-87A AF

Type: AS  
prime: Douglas  
guide: Nortronics  
power: Aerojet  
nosecone: GE  
range: 1000 mi., a/c launch

★ FY '61 R&D budget set at \$50 million. May be increased to allow configuration changes. Agreement reached to supply British AF with this 1-stage missile when dvlpd.

#### SLAM AF

Type: SS  
No contracts announced.

Supersonic Low Altitude Missile, big brother of CLAM. Contractors now being selected.

#### SPARROW III AAM-N-6, 6A Navy

Type: AA  
prime: Raytheon  
guide: Raytheon  
range: 5-8 mi.  
power: Thiokol/Aerojet

★ Work continuing on SPARROW III with additional \$26.7 million BUWeps contracts to Raytheon.

#### SS-10 Army

Type: SS  
prime: Nord of France  
weight: 33 lbs.  
range: 0.9 mi.

Wire guided anti-tank weapon. Operational with U. S. and NATO forces. Used by the French in Algerian battles with success.

#### SS-11 Army

Type: SS  
prime: Nord of France  
weight: 62 lbs.  
range: 2 mi.

★ German order of 25,000 SS-11's require full production capability of Nord. Army will cease consideration of this anti-tank weapon in favor of COBRA.

#### SUBROC Navy

Type: SU-UU  
prime: Goodyear  
guide: Librascope/Kearfott  
power: Thiokol  
range: 25-50 mi.

This complex weapons system is launched through a torpedo tube of a submarine or surface vessel. Rising, it flies from 25 to 50 miles through the air, then re-enters the water and homes on its submerged target. Key to perfection of the system is reliability and range of built-in sonar equipment. Work is now continuing along that line.

#### T-238 Army

Type: SS  
No contracts announced.

Short-range mobile poison gas rocket. T-238 will be launched from truck-mounted tubes.

#### TALOS SAM-N-6 Navy

Type: SA  
prime: Bendix  
guide: Bendix/AVCO  
power: McDonnell  
speed: Mach 2.5  
range: 65 mi.

Unique in its integral ramjet body, TALOS is now operational aboard the guided missile cruiser GALVESTON.

#### TARTAR Navy

Type: SA  
prime: Convair  
guide: Sperry  
power: Aerojet/Rocketdyne  
speed: Mach 2.0  
range: 15 mi.

Now has new electric boost by Rocketdyne. TARTAR is sched to be operational this year. Test firings underway in Pacific waters. Jap Govt will buy 42 TARTAR missiles.



# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

## MILITARY MISSILES, June 1960

★ New information this month

### TERRIER SAM-N-7 Navy

Type: SA  
prime: Convair  
guide: Sperry  
power: Allegheny/Rocketdyne  
speed: Mach 2.5  
range: 10 mi.

Beam riding missile for use on larger surface ships, TERRIER has new electronic booster like cousin TAR-TAR. Operational with the fleet. Advanced TERRIER missiles now in increased production.

### THOR SM-75 AF-NASA

Type: IRBM  
prime: Douglas  
guide: AC Spark Plug  
nosecone: GE  
power: North American  
range: 1500 mi.

Now operational. RAF THOR units now complete with 60 birds. In its role as a research vehicle, THOR has served as an effective first stage booster, most capably shown in the THOR-ABLE lunar probe combo.

### TITAN SM-68 AF

Type: ICBM  
prime: Martin  
guide: Bell/Am. Bosch/Sperry Rand  
power: Aerojet  
nosecone: AVCO  
range: 5500 mi.

Test facility at Vandenberg will be ready soon. TITAN program now moving along nicely.

### TYPHON Navy

Type: SA-SS  
range: 20 and 100 mi.

Under dvlpmt. by Navy. New name for SUPER TALOS (long range TYPHON) and SUPER TARTAR (medium range TYPHON).

### WAGTAIL AF

Type: AS  
prime: Minn-Honeywell  
guide: Minn-Honeywell  
power: not releasable

This remarkable rocket will be able to follow contours of terrain and change speed in flight. WAGTAIL has been successfully sled-tested.

### WEAPON ALPHA Navy

Type: SU  
No contracts released.  
BuOrd "in-house"

Operational with the fleet, WEAPON ALPHA is rocket-powered depth charge now installed on destroyer escorts and class 931 frigates.

### WHITE LANCE GAM-83B AF

Type: AS  
prime: Martin  
guide: radio command Republic  
power: Thiokol

Larger model of Navy BULLPUP for AF use. Now in dvlpmt. FY '60 Funding \$6½ million.

### WILLOW Army

Type: SS  
prime: Chrysler

All information still highly classified.

### ZUNI Navy

Type: AS-AA  
Fuze contract released to Bulova  
range: 5 mi.

Operational with carrier based a/c, ZUNI is a folding fin all-weather unguided rocket carried in multiple units. The Douglas AD a/c carry 48 ZUNIs below their wings on combat missions. The weapon is effective against pill-boxes, tanks, gun emplacements and small ships.

## SPACE PROJECTS, June 1960

### PROJECT ADVENT ARPA

Type: Advanced Communications Satellite  
prime: No contracts announced  
Obj: Designed to be a global real-time repeater.

★ Basically same as PROJECT DECREE except for accelerated pace. Polar-orbiting satellites, such as PROJECT STEER and PROJECT TACKLE, may grow as off-shoots of PROJECT ADVENT.

### AGENA AF/NASA

Type: Liquid-fueled Upper Stage  
prime: Lockheed  
Obj: AGENA will be useable as a second stage to ATLAS and THOR missiles. It incorporates a Bell rocket engine similar to that used previously in the HUSTLER vehicle. The AGENA upper stage is used in DISCOVERER, MIDAS and other projects. AGENA and SATURN are part of PROJECT TRIBE.

### AGENA B AF/NASA

Type: Liquid Fuel Upper Stage  
prime: Lockheed  
obj: Deep Space Missions

ATLAS-AGENA B moon shot sched for mid '61. It will TV moon and land instrument capsule to tell NASA about the makeup of the moon. Ford has contract for capsule. Shot with THOR sched this summer by AF. NASA will buy 16 Agena-B launch vehicles for \$50 million.

### ASTROBEE AF

Type: Space Probe Rocket  
Obj: Designed for short-range space-probes

★ Repeated use of this handy rocket. Many missions planned for future short-range space research missions.

### ATLAS-ABLE NASA

Type: Large Booster  
prime: Convair/Space Tech Labs  
guide: GE/Burroughs/Am. Bosch  
power: Rocketdyne/Aerojet  
Obj: Designed to orbit 200-lb. satellite around moon.

2 ATLAS-ABLE shots are sched for late '60. Both aimed at lunar orbit. Project going well, with much interest in this combo.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

(6th Sheet)

SPACE PROJECTS, June 1960

★ New information this month

## CENTAUR NASA

Type: Soft-Land Moon Vehicle  
prime: Convair  
guide: Minn-Honeywell  
power: P&W/JPL  
1st stage: Hi-energy Atlas  
2nd stage: 2 P&W liquid hydrogen engines  
3rd stage: JPL 6000 lb. thrust liquid engine  
Obj: Designed to land 730-lb. payload on moon in soft landing.  
for heavy earth satellites and probes to Mars and Venus.

★ Static tests underway in San Diego. Full firing due early '61.

## COURIER ARPA (Army)

Type: Communications Satellite  
prime: Philco  
Obj: Designed to be delayed repeater satellite, part of PROJECT NOTUS.

Shot now sched for July. Repeated delays in launch schedule.

## DECREE ARPA (Army)

Type: Global Communications Satellite  
prime: no contracts announced  
Obj: Designed to be global real-time repeater with satellite remaining at stationary distances from each other.  
repeaters remaining stationary distances from each other.

★ Project name dropped, but continuing at accelerated pace under PROJECT ADVENT.

## PROJECT DISCOVERER AF

Type: Stabilized Satellites  
Obj: (a) Achieve orbital capabilities of large satellite vehicles.  
(b) Dvlp tech for operational military satellite systems.  
(c) Recover by use of suitable re-entry capsule for bio-medical and other studies.  
(d) Execute nonrecoverable advanced engineering tests.  
(e) Such other objectives as may be directed.

### Tasks: DISCOVERER satellites

Prime: Lockheed  
Has achieved orbit 6 times in 10 tries and has made successful re-entries. Ejected capsules have not been recovered.

### MIDAS Satellites

Prime: Lockheed  
Now in test-flight stage of dvlpmt. Early Warning Satellite dvlpd to spot enemy ICBM launchings by infra-red.

### SAMOS Satellites

Prime: Lockheed  
Not yet ready for flight. Orig. sched for March.

## DYNA-SOAR I AF/NASA

Type: Boost-Glide Orbiting Vehicle  
prime: Boeing (for Glider)  
Martin (for Booster)  
guide: not announced  
power: not announced  
Obj: Manned glider for orbit and re-entry

★ Boeing now constructing manned glider. Speed up on booster expected. Launch expected late '64. Soviets also working on manned edge-of-space glider.

## PROJECT ECHO NASA

type: Inflatable Satellites  
Obj: Global communications experiment.

THOR-DELTA as launch vehicle for first attempt of 5 May, postponed due to technical problems in launch.

## IRIS NASA

Type: Sounding Rocket  
prime: Atlantic Research  
Obj: Designed to put 100 lb. payload at 185 mi. altitude.

This rocket apx 13 ft. long and 1 ft. in diameter, will be launched in near future.

## JUNO II NASA

Type: Large Booster  
prime: Chrysler  
guide: Ford Instrument  
power: Rocketdyne/JPL  
Obj: Attempts to put small payloads in space.

Project to be completed, 1960.

## LITTLE JOE NASA

Type: Test Vehicle  
prime: North American  
power: Thiokol  
Obj: Test Vehicle for Mercury  
alt: 55 mi.  
dist: 200 mi.

★ Still in limited use as test vehicle for PROJECT MERCURY. Major mission, however, completed.

## MERCURY NASA

Type: Manned Satellite  
prime: McDonnell  
Obj: Will attempt to put man in brief orbit, then parachute him in capsule safely to earth.  
guide: not announced  
power: ATLAS (Rocketdyne)

Project moving fast with escape system tested at sea. Dramatics by NASA in attempt to raise public interest.

## MIDAS WS 117L AF

Type: Early Warning Satellite  
prime: Lockheed  
Obj: Infrared sensing of enemy ICBM launchings.

★ Launch of 24 May successful, but data is no longer being revd due to telemetry failure. Planned orbit avoids USSR, as AF is shaken over U-2 incident. State Dept claims future MIDAS satellites will ease tension and supervise disarmament. Complete MIDAS system will give US 30 minutes warning of ICBM attack.

## MRS. V ARPA

Type: Maneuverable, Recoverable Manned Space Vehicle  
No contracts announced  
Obj: Will attempt to place manned vehicle in orbit, then maneuver out of original orbit in space, then return safely to earth.

This project is also known as DYNA-SOAR II. Vehicle will weigh in excess of 20,000 lbs. Launch may be from or in space.

## NERV NASA

Type: Nuclear Emulsion Recovery Vehicle  
prime: GE  
Obj: Measurements of Van Allen Radiation Belts

★ Initial shots expected Sept '60 with ARGONAUT rocket. Later shots with SCOUT, not yet on calendar, designed to place 75 lb. cone-shaped payload to alt of 10,000 mi. Early shots to alt of 1800 mi.

## NIMBUS NASA

Type: Meteorological Satellite  
Obj: Designed to take television pictures of cloud formations and frontal systems.

Follow up satellite for TIROS. Will be in circular polar orb. Earth oriented. Later models will have spectrometer and radar.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

## SPACE PROJECTS, June 1960

★ New information this month

### NOVA NASA

Type: Large Booster  
prime: Rocketdyne  
power: Rocketdyne  
Obj: Will build 6-12 million lb. thrust booster for Outer Space

Rocketdyne's 1.5 million lb. thrust engine is heart of this system. NOVA will be cluster of 4 - 6 such engines. Engine in early dvlpmnt now, sched for operation after 1965.

### ORION AF

Type: Rocket propelled by nuclear pulses  
prime: General Atomic  
Obj: Nuclear powered Outer Space Vehicle

★ In basic testing stage. Apx \$2½ million spent to date.

### PONTUS ARPA

Type: Material Research  
prime: no contracts announced  
Obj: Experimentation and dvlpmnt of better structural and power conversion mats for military requirements in surface, air and missile programs.

### PRINCIPIA ARPA

Type: Solid Propellants  
prime: no contracts announced  
Obj: Dvlping new solid propellants with 10-20 percent higher specific impulses.

★ Project studies to be carried out by universities. Contract negotiations now almost completed.

### PROJECT 609 AF

Type: Four-stage Satellite Launch Vehicle  
prime: Chance Vought  
guide: Minn-Honeywell  
power: Aerojet/Allegany/Thiokol  
Obj: Designed to place 200-300 lb. Satellites in orbit.

★ SCOUT rockets to be bought from NASA after testing. Will be used for AF experiments.

### PROJECT RANGER NASA

Type: Lunar Probe  
prime: Jet Propulsion Lab/Aeronutronics  
Obj: Hard landing of instruments on moon

★ ATLAS-AGENA B will carry 800 lb. (RANGER) package to moon. The larger payload will orient the 300 lb. (TONTTO) package for hard moon landing.

### PROJECT ROVER AEC/NASA

Type: Nuclear rocket  
Obj: Prove feasibility of nuclear rocket

★ Now in R&D. Lockheed has contract to find adequate atom resistant materials. AEC to dvlp power-plant, KIWI-A and advanced KIWI-A3. NASA to provide frame and test combined power-plant, air-frame. \$11 million in funds restored to project ROVER, bringing grand total of \$21 million in FY '61 funds. Will see nuclear power-plant by '63.

### SAMOS WS 117L AF

Type: Reconnaissance Satellite  
prime: Lockheed  
Obj: TV Satellite

★ Launch of prototype delayed to late '60. Difficulties in launch pad preparation. Date for operational SAMOS not yet established. AF has \$200 million in FY '61 funding for SAMOS.

### SATURN NASA

Type: Large Booster  
prime: Convair  
power: Pratt & Whitney  
Obj: Clustered 1.5 million lb. thrust booster for Outer Space Vehicles.

★ Douglas won contract for second stage. SATURN is expected to be fully operational in early '64. Full static firing of all engines has been successfully accomplished.

### SCOUT NASA

Type: Four-stage Satellite Launch Vehicle  
prime: Chance Vought  
guide: Minn-Honeywell  
power: Aerojet/Allegany/Thiokol  
Obj: Designed to place 200-300 lb. satellites in orbit.

★ First stage: Modified POLARIS

Second Stage: Modified SERGEANT

Third stage: 3rd stage of VANGUARD (enlarged)

Fourth stage: standard VANGUARD 3rd stage.

Also see AF PROJECT 609. First test of April unsuccessful. Second test expected soon.

### SHEPARD ARPA

Type: Tracking System  
prime: no contracts announced  
Obj: Tracking and data reduction

System will detect and track satellites from Space Surveillance Control Center.

### STEER ARPA (Army)

Type: Communications Satellite  
prime: Bendix  
Obj: Destined to serve the Strategic Air Command for communications purposes, STEER is part of the NOTUS project. STEER will be launched in a polar orbit. Still in R&D. Army will dvlp the satellite, AF will launch it.

★ Has been dropped along with PROJECT TACKLE and DECREE. PROJECT ADVENT may incorporate all these.

### SUNRISE ARPA

PROJECT SUNRISE will make studies of advanced military weapons with special concentration on space delivery.

### THOR-ABLE NASA

Type: Large Booster  
prime: Douglas/Space Tech Labs  
Obj: Designed for deep space probes of lighter payloads than ATLAS-ABLE.

guide: GE  
power: Rocketdyne/Aerojet

★ Good reliability with this combo, as shown by success of PIONEER 5, in giving us valuable outer-space data.

### THOR-DELTA NASA

Type: Satellite Launching Vehicle  
prime: Douglas  
guide: ITT

power: Aerojet/Allegany  
Obj: Designed to put small satellites (50-80 lbs.) into orbit around moon.

# DATALOG OF MISSILE, SPACE AND DETECTION PROJECTS

(8th Sheet)

## SPACE PROJECTS, June 1960

★ New information this month

Use as launch vehicle, with first satellite launches mid '60 on TIROS 2 project.

### TIROS NASA

Type: Meteorological Satellite  
prime: RCA  
Obj: Reveal certain aspects of the nature of weather

Weather Bureau and NASA are both in agreement that TIROS 1 was more successful than expected.

### TIROS 2 NASA

Type: Meteorological Satellite  
prime: RCA  
Obj: Provide info on nature of weather

TIROS 2 will be much the same as its predecessor TIROS 1 with infra-red photo equipment. Its power will be THOR-DELTA, and it is sched for mid '60.

### PROJECT TRANSIT Navy

Obj: Astro-Geodetic Navigation Satellite  
★ Delayed TRANSIT 2 launch attempt in June '60. Navy plans 2 operational TRANSIT satellites to give continuous navigational information.

### PROJECT TRIBE ARPA

Obj: Outer Space Vehicles

PROJECT TRIBE is a research, experimentation and systems dvlpmnt designed to obtain at the earliest practical date a continuing family of military space vehicles capable of satisfying the needs for space missions as may be determined by Secretary of Defense from time to time. Guidance, stabilization and control components necessary to satisfactory performance of the vehicles shall be included in the scope of this assignment. The SATURN Task and AGENA Task are part of Project TRIBE.

### X-15 AF/Navy/NASA

Type: Rocket-Powered Manned Aircraft  
prime: North American  
power: Thiokol  
Obj: Designed to take man in controllable a/c to fringes of outer space—250,000 ft. altitude, at speed of Mach 5 (better than 3600 mph.).

★ North American shooting for modified X-15 with orbital capabilities, may get NASA support. Test with double power XLR99 powerplant expected soon.

### PROJECT YO YO Navy

Type: Reconnaissance Satellite  
Satellite for photo recon. Ship or sub launch.

## DETECTION PROJECTS, June 1960

### BALLISTIC MISSILE DEFENSE

#### BMEWS AF

Type: Ballistic Missile Defense Radar System  
prime: RCA  
Obj: Ballistic Missile Early Warning System designed for 40-minute notice of approaching enemy ICBMs.

Plans for BMEWS England well underway. Construction costs will be paid by the British. Total cost to U.S. for equipment: \$81 million.

### PROJECT DEFENDER ARPA

Obj: Ballistic Missile Defense  
ESAR, TRADEX and PINCUSHION are only part of the entire ballistic missile defense program of ARPA. The GLIPAR studies, (Guide Line Identification Program for Anti-Missile Research) is also a part of Project DEFENDER.

### ESAR ARPA

Type: Advanced Warning Radar  
prime: Bendix  
Obj: Electronically Steerable Array Radar is designed for ground installation to warn of approaching enemy missiles. Multitude of individual cells will give more flexibility than other systems of steerable radar. Part of PROJECT DEFENDER.

### GLIPAR ARPA

Type: Study Group for Missile Defense  
Obj: Designed to work on future ICBM defense. Called upon by DEFENDER and LONGSIGHT.

### PROJECT LONGSIGHT ARPA

Type: Study System in Missile/Space Field  
Obj: Recommendations as to projects which should be initiated to satisfy future military requirements. GLIPAR (Guide Line Identification Program for Anti-Missile Research) which was initiated. GLIPAR is now used by both LONGSIGHT and DEFENDER. LONGSIGHT more advanced than DEFENDER.

### PINCUSHION ARPA

Type: Advanced Radar  
prime: Raytheon  
Obj: PINCUSHION is a many-frequency radar installation to be located on Kwajalein in the Marshall Islands, initially, as an early warning radar of a more variable type than TRADEX or ESAR.

### SAGE AF

Type: Continental air warning and control network  
prime: IBM  
Obj: Provides a push-button missile defense utilizing a search radar system to locate enemy aircraft and destroy them with integrated BOMARC missiles.

SAGE includes air-borne radar by Burroughs. Off shore planes will give sooner warning of enemy attack by air. SAGE is being cut back with BOMARC, but the radar system may be used by FAA for air traffic control.

### TRADEX ARPA

Type: Advanced Radar  
Prime: RCA  
Obj: TRADEX is a modification of the radar types designed for BMEWS. It has better range.

### VELA ARPA

Obj: Research, experimentation and systems dvlpmnt related to the nuclear test moratorium.  
VELA Uniform: R&D on sub-surface nuclear explosion detection.  
VELA Sierra: R&D on ground detection of nuclear explosions in space  
VELA Hotel: R&D on satellite detection of nuclear explosions in space.

Funding totals \$9,885,000 for FY '60. Broken down, this includes: \$8,535,000 for VELA Uniform; \$1,050,000 for VELA Sierra; \$300,000 for VELA Hotel.

### PROJECT TEEPEE Navy

Type: Long Range, High Frequency Radar  
Obj: ★ Provide ICBM detection



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Deadline for advertisements: 11 January 1960

### MARCH 1960

#### NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Deadline for advertisements: 8 February 1960

### APRIL 1960

#### NAVY SUPPLY SYSTEM

Deadline for advertisements: 7 March 1960

### MAY 1960

#### ARMY ORDNANCE CORPS

Deadline for advertisements: 11 April 1960

### JUNE 1960

#### AF AIR MATERIEL COMMAND

Deadline for advertisements: 9 May 1960

### JULY 1960

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Deadline for advertisements: 6 June 1960

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#### NAVY ASTRONAUTICS PROGRAM

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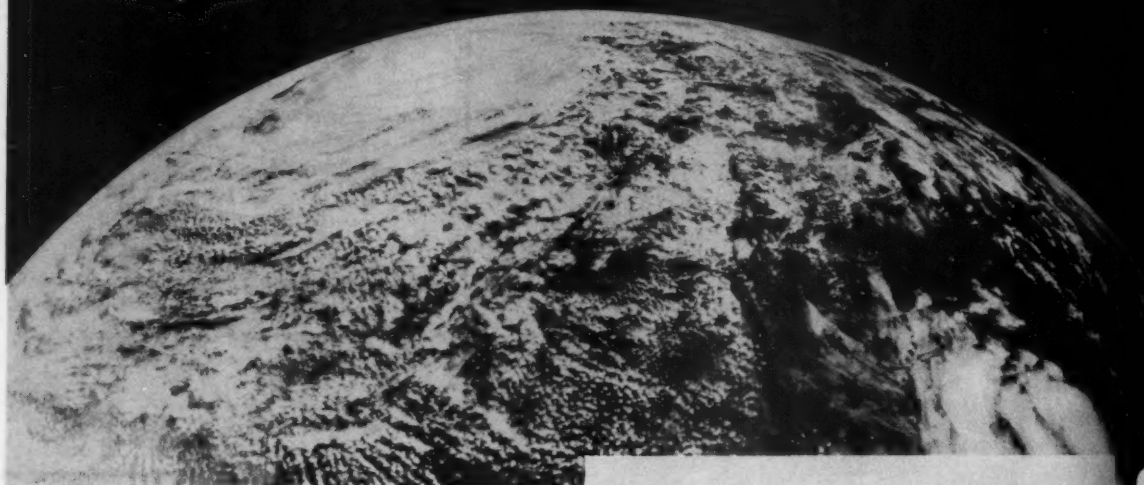
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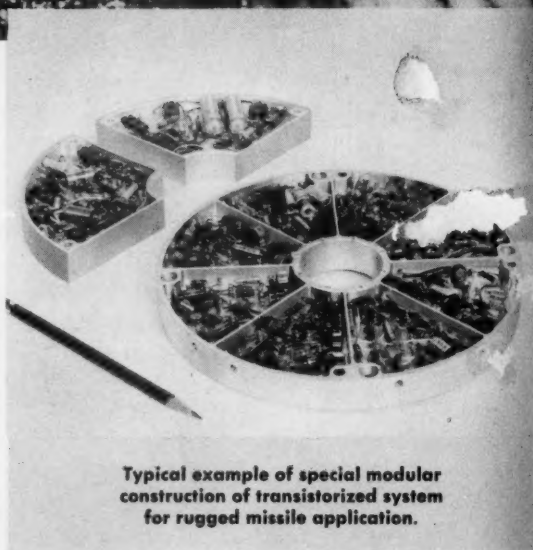
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